DOCUMENT RESUME

ED 140 418 EA 009 573

AUTHOR	Butts, Michael Vern; Loobey, Phyllis Price
TITLE	Transportation Alternatives for the Physically Limited and Elderly.
INSTITUTION	Lane Transit District, Eugene, Oreg.
PUB DATE	Mar 74
NOTE	169p.; Photos will reproduce poorly
AVAILABLE FROM	Lane Transit District, P.O. Box 1135, Eugene, Oregon 97401 ($6.00)
EDRS PRICE	MF-$0.83 HC-$8.69 Plus Postage.
DESCRIPTORS	Blind; *Bus Transportation; Change Agents; *Change Strategies; Community Services; Delivery Systems; Demography; Mentally Handicapped; *Needs Assessment; *Older Adults; Performance Specifications; Physical Design Needs; *Physically Handicapped; Planning; Surveys; Training; Transportation
IDENTIFIERS	Oregon (Eugene)

ABSTRACT

Lane Transit District (LTD) sponsored three surveys in an attempt to understand the needs of physically handicapped and elderly persons and to recommend appropriate operational and physical changes within the system to meet those needs. The secondary intent of the study was to bring about public awareness of the mobility problems of the physically limited and the elderly. The three populations surveyed were social service agencies dealing with the target population, clients of the agencies (those physically limited and elderly), and system bus drivers. Special attention was given to mentally retarded children enrolled in a special school through observations at training sessions involving the children and through interviews with professional staff. The study attempted to determine such things as the degree of mobility of the target population, their dysfunctions and design requirements, their needed and desired travel patterns, and existing transportation services for the target population; as well as provide an avenue for client, agency staff, LTD staff and driver input into the planning process. (Author/MLF)

Documents acquired by ERIC include many informal unpublished materials not available from other sources. ERIC makes every effort to obtain the best copy available. Nevertheless, items of marginal reproducibility are often encountered and this affects the quality of the microfiche and hardcopy reproductions ERIC makes available via the ERIC Document Reproduction Service (EDRS). EDRS is not responsible for the quality of the original document. Reproductions supplied by EDRS are the best that can be made from the original.

ED140418

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

TRANSPORTATION ALTERNATIVES
FOR THE
PHYSICALLY LIMITED AND ELDERLY

by

Michael Vern Butts

and

Phyllis Price Loobey

Published by
Lane Transit District
Eugene, Oregon

March, 1974

$6.00

EA 009 573

LANE TRANSIT DISTRICT

March 20, 1974

Board of Directors
Lane Transit District
P.O. Box 1135
Eugene, Oregon

Attention: Dan Herbert, President

Dear President Herbert:

The following report entitled Transportation Alternatives is the culmination of a six-months study approved by the Board of Directors in October, 1973.

The report sets forth general and specific characteristics of the target population gathered from three surveys, the Agency Inventory Survey, the Client Inventory Survey and the Bus Driver Survey.

The intent of this document is to provide the Lane Transit District's staff the base data upon which to plan and implement services for the physically limited and the elderly. The methodology, procedures and results are documented in the report.

I will be pleased to discuss with you further any aspects of this report. I also wish to express my appreciation to the Board of Directors for allowing me the opportunity to conduct the study.

Sincerely yours,

Phyllis P. Loobey

Subcommittee on Physically Limited and Elderly
Phyllis P. Loobey, Chairperson
Gary Buell
Dan Herbert
Fred Dyer

PL/ms

P. O. Box 1135, Eugene, Oregon 97401 • Telephone: 503/687-0613

ACKNOWLEDGEMENTS

We wish to express our sincere gratitude to the many people who have contributed to this study. Our special thanks are extended to Ting Li Cho of the Urban Planning Department, to James Marshall of the Program Evaluation and Development, School of Community Service and Public Affairs, both of the University of Oregon, and to David Rynerson who served as advisors and gave us their assistance in the preparation of this study.

Our appreciation is extended to Rusty Blake of the City of Eugene Parks and Recreation Department and Oliver Snowden of the Lane Council of Governments, who assisted in the design and direction of the surveys.

Special thanks go to the people who assisted in the workshops and training sessions: Mildred Bierwag, Mary Briscoe, Wanda Henson, Joan Rich, Mary Sherriffs, and Karen Duran, and to the people who conducted interviews: Clytie Backus, Richard Boehnke, Phillip Chase, Douglas Lee, Maria McNally, A. K. Phelps, James Pilon, Joan Rich, Mary Rynerson, and Craig Thorne.

Finally, we would like to thank the Lane Transit District for funding this project, with special gratitude to Fred C. Dyer, General Manager, David Rynerson, Mavis Skipworth, and Gary Hunt.

TABLE OF CONTENTS

CHAPTER PAGE

I. RESEARCH METHODOLOGY 1

Objectives 1

Method 2

II. A PERSPECTIVE ON THE PROBLEM 8

Introduction 8

Perspective as a Society 8

Perspective as an Individual 12

Perspective as a Transportation Planner 15

III. TO A HIGHER LEVEL OF AWARENESS 24

Introduction 24

Agency Workshop 25

Training Session for the Mentally Retarded . . 28

Training Sessions for the Elderly 33

Workshop With the Blind 36

Contacts, Interviews and Publication 41

IV. CHARACTERISTICS OF THE TARGET POPULATION AND IMPLICATIONS FOR VEHICLE AND SYSTEM DESIGN 44

Introduction 44

Characteristics of the Target Population . . . 45

Implications for Vehicle and System Design . . 56

Disability Variations and Implications for Design 58

Aid Variation and Implications for Design . . . 61

TABLE OF CONTENTS (CONT'D)

CHAPTER PAGE

Functional Disability and Implications for Design. 63

Difficulties Experienced by Present Bus Patrons 68

V. SYSTEM AND EQUIPMENT DESIGN/CRITERIA 72

Introduction 72

Systems Design 73

Systems Design Criteria. 76

Building Criteria. 81

Shelter and Bus Stops. 89

Operational Barriers 90

Visual Analysis of Equipment 94

VI. FINDINGS, CONCLUSIONS AND RECOMMENDATIONS 101

Findings 101

Conclusions. 103

Recommendations. 105

APPENDIX A 108

Letter Preceding Salem Meetings. 109

List of Salem Administrators Contacted and Local Advisors 110

List of Social Service Agencies Contacted. 111-114

APPENDIX B 115

Newspaper Articles in Regard to Political Climate 116-117

Newspaper Interview of Study Planners. . . 118-120

CHAPTER PAGE

APPENDIX C 121

Agency Invitation Letter. 122

Transportation Alternatives Proposal. . . 123-125

Agency Workshop Program 126

Agency Inventory Survey 127-129

Agency Inventory Survey Letter. 130

Procedural Description of Client Survey . . . 131

Client Inventory Survey Letter 132

Client Inventory Survey 133-137

Agency Workshop News Letter 138

Bus Driver Survey. 139

Congressmen and Representatives Letter. . . . 140

APPENDIX D. 142

Finding Number One - Representativeness of Sample 143

Finding Number Two - System Alternatives. . . 145

Finding Number Fourteen - "American Transit Association Study of the Transportation Needs of the Elderly and the Handicapped.. 148

LIST OF TABLES, DIAGRAMS AND PICTURES

TABLES PAGE

1. The Distribution of Physically Limited and Elderly in the Eugene/Springfield Area. 46

2. Physically Limited Labor Force Status by Educational attainment. 48

3. Percent of Physically Limited in Mobility Limitation Categories by Labor Force Status . . 49

4. Percent of Physically Limited With Functional Disability by Labor Force. 50

5. Percent of Physically Limited by Age and Labor Force Status. 51

6. Percent Physical Limited and Elderly by Income Level. 52

7. Percent Physically Limited and Elderly by Income Source 53

8. Percent of Physically Limited Labor Force Status by Income Source 54

9. Average Number of Trips Per Week by Physically Limited and Elderly by Activity 55

10. Percent Physically Limited by Degree of Mobility . 57

11. Percent Elderly by Degree of Mobility Limitation . 58

12. Percent Physically Limited by Disability.. 60

13. Percent Elderly by Disability 61

14. Percent Physically Limited by Aid Used 62

15. Percent Elderly by Aid Used 63

16. Percent Physically Limited by Functional Disability. 65

17. Percent Elderly by Functional Disability 66

LIST OF TABLES, DIAGRAMS AND PICTURES (CONT"D)

TABLES PAGE

18. Percent Physically Limited and Elderly Suggestions for Improvements 67

19. Percent of Physically Limited and Elderly Experience Difficulties Using the Present Bus System 69

20. Equipment Criteria Matrix 92

21. Agency Transportation Service Inventory 93

22. Representativeness of Transportation Alternatives Sample. 144

23. The Distribution of Physically Limited and Elderly by System Alternatives by Age. . 146

DIAGRAMS

1. Comprehensive Planning Design 3

2. System Alternatives Determined by Interrelated Functional Disabilities. 147

PICTURES

1-6. Visual Analysis of Equipment 94-99

If

If we, with all our worldly wisdom, were to assemble
    Prior to birth,
    And plan the world,
Not knowing who would be who--
Not knowing who would be poor, blind, deaf, crippled,
    A member of a prejudged minority, or one who is
    Too soon and too hard hit by age and its infirmities,
I'm sure a life of excitement and fulfillment
    Would be planned for all.
A complete life . . .
For fear that one of us might be one of the disadvantaged.

Michael Butts 1974

CHAPTER I

RESEARCH METHODOLOGY

A. Objectives

The purposes for this study are manifold, dealing with a clear defining of the problem and its dynamics and the analyzing of probable solutions. Specifically, this study sought to satisfy the following objectives:

1) To assess the transportation needs of the physically limited and elderly of the Eugene/Springfield Metropolitan area.
2) To accelerate the awareness process, in the general public as well as the target population, of the mobility problems of the physically limited and elderly.
3) To establish design criteria, both operational and physical, for the formation of a viable transportation service for the target population.
4) To meet the Urban Mass Transportation Administration funding guidelines for the funding of such an extension of transportation services.

5) To meet the objectives of the Lane Transit District's Sub-committee task force on extending transportation services to the physically limited and elderly.

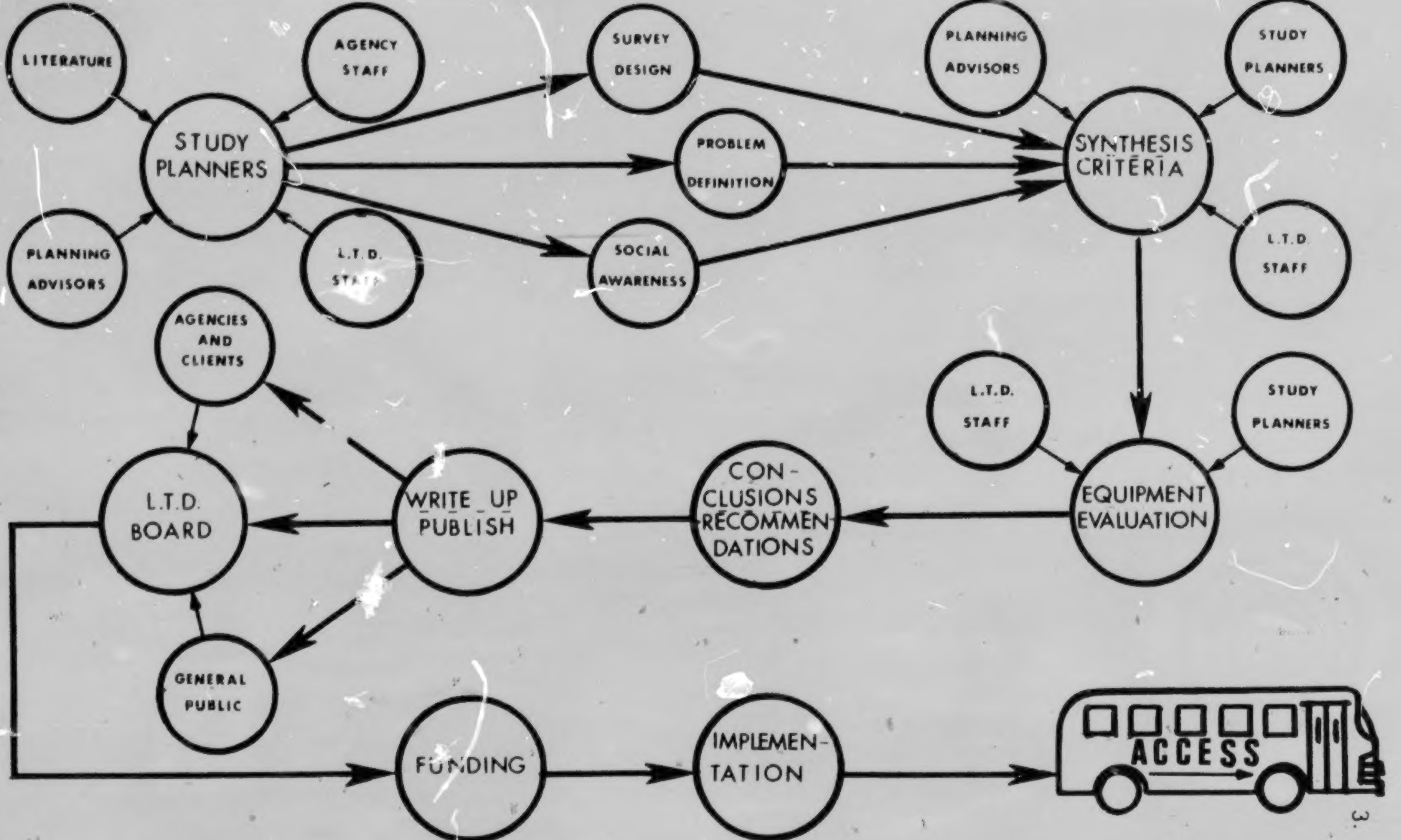
The information presented in this report is primarily the culmination of three different surveys that were conducted Fall and Winter of 1973-1974. The three populations surveyed were social service agencies dealing with the target population, clients of the agencies (those physically limited and elderly), and Lane Transit bus drivers. Generally, an attempt was made to determine such things as the degree of mobility of the target population, their dysfunctions and design requirements, their needed and desired travel patterns, and existing transportation services for the target population, as well as provide an avenue for client, agency staff, Lane Transit District staff and bus driver input into the planning process.

B. Method

The entire study process was designed to include the Lane Transit District staff, agency staff, agency clients, and consultants at each stage of development throughout this study (see diagram on page 3).

In an attempt to locate the target population, those

COMPREHENSIVE PLANNING MODEL



LITERATURE
AGENCY STAFF
PLANNING ADVISORS
L.T.D. STAFF
STUDY PLANNERS
SURVEY DESIGN
PROBLEM DEFINITION
SOCIAL AWARENESS
PLANNING ADVISORS
STUDY PLANNERS
SYNTHESIS CRITERIA
L.T.D. STAFF
L.T.D. STAFF
STUDY PLANNERS
EQUIPMENT EVALUATION
CONCLUSIONS RECOMMENDATIONS
WRITE UP PUBLISH
AGENCIES AND CLIENTS
L.T.D. BOARD
GENERAL PUBLIC
FUNDING
IMPLEMENTATION
ACCESS

physically limited and elderly, contact was established with those social service agencies dealing even tenuously with the target population. An effort was made to contact agencies dealing with all avenues of life (i.e., employment, education, recreation, culture, etc.). The agencies were identified through the "Social Services Directory" compiled by the Lane Council of Government. A total of sixty-four agencies were identified (see Appendix A).

In order to be received favorably by local agencies, personal contact was made at the head offices in Salem, Oregon. This contact helped locate pertinent literature and information, as well as acquire agency entrance at the local level (see Appendix A).

Survey populations contacted included 1) sixty-four agencies, 2) over fifteen hundred physically limited and elderly, and 3) one hundred and nine bus drivers.

Agency surveys were given out at the end of the agency workshop and the remainder were mailed. The return rate was approximately 95 percent.

The client inventory survey population was divided into three age groups in order to compare the survey data with existing 1970 census data. The age groups were 1-15 years, 16-64 years, and 65 years and older.

Surveys were given to those persons over 65 years of age through personal interviews and partial mailings. Given the total number of elderly persons with mobility limitations over the age of sixty-five as 2,987, a four percent representative sample was taken per census tract.

Surveys were given to those persons between the ages of 16 and 64 years through personal interviews and partial mailings. Given the total number of disabled persons as 7,833, a four percent representative sample was taken per census tract.

Those persons below the age of 16 years of age were considered represented, in regards to design criteria, through the surveying of those persons over the age of 16 years. However, special attention was given to the mentally retarded children through observations at training sessions involving the children and through interviews with professional staff.

In order to maintain the confidentiality of the agencies' clientele, a system was designed which allowed a survey to be taken without knowing the clients' names or home addresses. Each agency compiled a master list of their clients who could not presently use the existing bus system due to physical limitations. Space was provided on each survey for an assigned agency number, the client number, and the client's home location by transportation zone.

In some cases, agencies felt that a personal interview would be more effective, in which case such a procedure was followed. In most cases, however, agencies agreed to the mailing of surveys to their clients. For those surveys which were mailed, the clients were given a period of three weeks within which to return, by mail to the Lane Transit District office, their survey. After three weeks, a list of returned survey numbers were listed and given to the appropriate agency for follow-up phone calls.

The bus driver surveys were conducted during the month of February, 1974. Surveys were given out to the bus drivers along with their paychecks. The objectives for the bus driver surveys were 1) to identify the barriers experienced by those persons already riding the bus system, and 2) to obtain the drivers' input into the planning process in regard to problem definition and solution.

The agency inventory survey represented approximately a 95 percent sample. The client inventory survey represents approximately a 3.4 percent sample. The total number of physically limited and elderly were drawn from Oregon census data information and an extrapolation of national statistics,respectively. The bus driver survey represents approximately a 50 percent sample.

The main intent of this study was to identify the variety of dysfunctions,set up the appropriate criteria which would meet the special needs dictated by these dysfunctions, and recommend the needed operational and physical changes within the present bus system. The secondary intent of this study was to bring about an awareness upon the general public of the mobility problems of the physically limited and elderly. Both objectives were met through surveying, workshops, training sessions, personal contacts, interviews, and the publication of this report.

CHAPTER II

A PERSPECTIVE ON THE PROBLEM

A. Introduction

What a shock it is to learn that a thirty-five year old man has lived within the confines of his home his entire life because he was crippled...his folks knew what was best for their child.[1] What a shock it is to learn that some elderly persons feel they would probably be better off dead. What a crime it is that only a few of these persons, socially forced into isolation, dare to challenge their role in life--challenge society so as to define for themselves what they can and cannot do.

The fact is that we will all too soon become limited physically, if not by an accident then by the natural process of aging. We must therefore speak of "we" and not "they" when we address the issues of transportation for the physically limited and elderly.

B. Perspective as a Society

As a society we have much to examine within our value system, much to identify as good and allow to happen if we are to obtain an accurate and fair perspective. To date, our society has defined man as white, Anglo-Saxon Protestant, healthy and bi-ped, with the ability and ambition to increase the fruits of his labor. Establishing this definition as the norm, our society has responded to those who deviate from this norm by, in effect, denying that they exist--but at the same time providing some compensation in an attempt to alleviate its guilt. Deloria, in his book Custer Died For Your Sins, has dramatized this idea; although the language is harsh, the perspective is worth revealing.

> Welfare is designed to compensate people insofar as they deviate from that norm (referring to the above definition of man). Insofar as a woman has an illegitimate child, she receives compensation. Insofar as a person is disabled, he receives compensation. Insofar as a person is too old to work, he receives compensation.
>
> Welfare buys that portion of a person which does not match the stereotype of the real man. Welfare payments are never sufficient, never adequate. This is because each person bears some relation to the norm and in proportion to their resemblance, they receive less.[2]

Society has reacted to persons deviating from the norm with discomfort and has responded with subtle ostracism. We, as a society, have resolved our problems through the process of psychic numbing--the ability to adjust the image of severity of a problem to one of minor intensity. We have even institutionalized this process by placing our problem children out of sight. As a result of our out-of-sight out-of-mind mentality, we have placed the Native Americans on reservations, the mentally disturbed in institutions in the isolated country, and have made the disabled and elderly invisible by making the community inaccessible to them.

It is our contention that isolation from the rest of the community has led to prejudice and discrimination. The true image of any person can only come about through contact. We can only speculate about the real identity of those who are isolated. In order to maintain our adaptive balance with society, to keep the gap between the real and the perceived within manageable proportions, we must struggle to refresh our imagery to keep it up-to-date, to relearn reality. This focus of reality gives us an adaptive behavior which facilitates our interactions with other people and moves us closer to the truths about ourselves and our society.

Today, because of coerced isolation, the elderly, as well as many of the physically limited, have been prejudged and discriminated against extensively in our society. The fact that a person must retire at a certain age is discriminatory against an age category regardless of his or her ability. Our values are so strongly held and pervasive that we institutionalize them through government programs. The elderly are stereotyped about their health, sexual interest and activities, mental state, and productivity.

> Prejudice and discrimination against the aged is widespread and fairly well documented. Perhaps the most common and serious prejudice

> against the aged is that most of the aged are ill or disabled. When most people are asked to estimate what proportion of persons over sixty-five are in some kind of institution, their estimates range from 10 percent to over half. Most people are surprised to find that only four percent of people over sixty-five are in any kind of institution including hospitals, nursing homes, homes for the aged, or other kinds of group quarters.[3]

Society has thus set in motion certain concepts of "what is" and has clearly defined the role, through a stereotyping perspective, of the physically limited and elderly. This stereotyping has buttressed, as well as perpetuated, this isolation at a time in which our society is moving at an extremely accelerated pace--a time which should demand a constant "up-dating" of reality.

In defining the transportation problems of the physically limited and elderly, we can see two self-supporting responses in our society. One, society has responded to those who do not meet the "normal man" image by leaving those persons out of view both physically and socio-culturally and thus out of the mainstream of life; and two, those persons not meeting the norm have, by and large, accepted that definition of themselves and responded through acceptance of isolation. Although the physically limited and elderly have been dissatisfied with their fate, they have adapted--a life style?

C. Perspective as an Individual

As an individual, one must not necessarily act or think according to the molds society has prescribed for him. Just as society and the isolated persons maintain this symbiotic relationship, so both must break this equally detrimental social contract. If the elderly and the physically limited are to re-enter society, they must develop a strong self-concept of themselves.

> The development of a self image is a dual process, dependent as it is on mechanism deeply ingrained in one's intrapersonal forces which mold the perception of the self and on one's circumstance, social phychological and cultural, which help shape, polish, constrain and modify the percept of the self.[4]

The failure to make such an adjustment has caused those not in touch with society to feel a deep sense of insecurity. This insecurity has led to a psychic rigidity, blocking the needed readaptation to a society which is in constant flux.

> Conservatism and psychic rigidity are in essence ego defenses against anxiety... (This rigidity) ...keeps the aged out of step with the ever-changing world and only acts to isolate them and add to their insecurity.[5]

In light of this perspective, what are the real potentials of those persons who are limited, physically and/or mentally, or the elderly? One's potential is defined by the socio-cultural milieu (the "normal man") and the self.

This definition of one's potential tends to be a self-fulfilling prophecy. This definition tends to establish one's role in certain situations. This role creates a habit of the mind which responds in specified ways, an abstraction of what one really is or could be. The following example will help clarify the point.

Twenty years ago, most of the mentally retarded were considered "homebound," which means lacking the ability to get out of the house or the failure of society to provide activities which would draw the child out of the home. In 1950, there were 30-40 retarded pupils attending public schools in New York State. Twenty years later in the school year 1969-70, there were an estimated 6,500 mentally retarded pupils going to public schools. In addition, over 6,000 retarded children, those judged too severely retarded for public school, were attending private facilities funded by state programs. Twenty years ago only 30-40 pupils were attending schools and now over 12,000 pupils are attending schools. Where were all the retarded children twenty years ago? Surely they were "homebound" by definition and not a part of "normal life activities. Clearly society had greatly underestimated the potential of these retarded persons.[6]

If we are to bring the physically limited and elderly back into our daily view and experience, we must become part of two battles. One battle being that which will provide those stereotyped an opportunity to express themselves as individuals and contributing citizens. The second battle being that of developing a level of maturity on the part of society in which it accepts people for what they are and can be; to forego the stigmatizing labels of blind, poor, old, or handicapped. As a society and as individuals, we must realize that all persons are unique and it is society's responsibility to tap the true latent potential of all individuals. The avenue that will provide this tapping of potential is provided through contact and access to that contact. The better the access, the greater the number of contacts available. These contacts will provide each person a varied and rich life experience as well as provide a socially healthy model from which to emulate. It is this richness of the self that makes possible a rich civilization with the ability to continue to unfold.

> ... a process in which the exercise of cooperation and collaborative attitudes and practices leads to greater 1) identification with the community, 2) interest and participation in the affairs of the community, and 3) sharing of common values and means for expressing these values. This implies a process at work in the community which facilitates the growth of awareness of, and loyalty to, the larger community of which the individual is a part; development of a sense of responsibility for the condition and status of the community; emergence of attitudes which permit cooperation with people who

> are 'different': and growth of common values, symbols, and rituals in the community as a whole.[7]

D. Perspective as a Transportation Planner

As a transportation planner, what should be one's part in bringing the physically limited and elderly back into society? The answer may seem simple--access to the city, its people and culture. To date, however, transportation planners have failed to encompass the needs of this group into their plans. The transportation planners' perception of his success or exemplary job performance has been put quite adroitly by Louis Mumford in his book The Urban Prospect.

> ... the 'cloverleaf' has become our national flower and 'wall-to-wall concrete' the ridiculous symbol of our national affluence and technological status.[8]

Transportation planners have supported the use of the private automobile to the point where it is now considered the status quo, if not a necessity, for the American family to have two cars. Of all the United States households in 1970, 24.6 percent owned two or more cars. Yet at the same time, one-fifth of the families in the United States had no car at all. This is truly a challenge for any family in this automobile-oriented age. Of those families headed by persons over the age of 65 years of age, 45 percent did not own a car.[9]

What, then, if one does not have a car, are the transportation alternatives? For the elderly and physically limited with aids, walking may serve as a viable alternative. However, not only does walking compress or restrict a person's life space and the variety of life experiences which can occur, but it also places a person in a sense of danger. Some of the fears of walking expressed by the elderly are the danger or fear of falling, being hit by a car, being attacked, or becoming lost. About 25 percent of the pedestrian deaths occurring in this country happen to persons 65 years of age or older.[10] Such facts lend support to the fears held by the elderly. Surely these fears expressed by the elderly must parallel those fears of the physically limited in their experience in traveling through our cities.

Another transportation alternative for the elderly and physically limited, one which is more likely used, is that of asking friends or family for a ride. The problem inherent in this alternative should be obvious. This alternative enforces dependency which would surely strengthen the tendency toward isolation. People enjoy their independence and part of their self-concept is established by this independence.

An effective transportation alternative, one which supports opportunity for people to participate in life as they desire, is public transportation. Planners, however, in the effort to meet the demand of the public for mass transit, have tended to set up a single standard of success, that of quantity, and avoided the standard of quality. Quantity, or "ridership," has been the yardstick for measuring progress. Quality must now become as, if not more, important, in measuring the progress and success of any transportation system. It is a time for maturity, a time in which we must realize that living to one's full potential is an inherent right of all people. Mobility is at the heart of life--a life that offers a choice between what is and what could be, the difference between existing and living.

> If we put these four groups together--the young and old, the disabled, the poor, and the addicted or mentally ill--we have a new kind of minority, a deviant mass of persons, deviant in the sense that they do not conform to the medical or social ideas of healthy, vigorous person capable of managing his affairs the way the rest of us manage ours. The significant fact is that these groups lack the mobility which the trends in our society seem to require.[11]

The legal effort in this state to make the city accessible, through the removal of architectural barriers to those persons with physical limitations serves notice. Ideally, such a response by businessmen, planners, and the public should preclude any such legislation; however, given this response, what is the transportation planner's role? One must realize that making the city accessible through the removal of architectural barriers must parallel and develop simultaneously the accessibility of the transportation system which brings those individuals into the city. One without the other would make either's efforts fruitless. Of the ten bills passed concerning the elderly and physically limited, three are related directly to access within the city.

(1) Bill 2308 requires that all new privately-owned; publicly-used buildings over 4,000 square feet shall be accessible to the physically limited.

(2) Bill 3249 permits a 100% tax write-off for businessmen who rennovate existing buildings for accessibility.

(3) Bill 693 requires curb cuts for every new block of sidewalk constructed in Oregon. [12]

At the local level, the downtown mall and Lane Community College are accessible; much of the University of Oregon is accessible; the Springfield shopping platform is accessible, as well as many other establishments throughout the Eugene/Springfield area.

(At the federal level) Bill 1074 requires all public buildings and facilities, financed in whole or part with Federal funds, to be made accessible to the physically limited.[13]

Specific to transportation concerns is the Urban Mass Transportation Amendments Act (1970, Public Law 91-453) which states:

> It is hereby declared to be the national policy that elderly and handicapped persons have the same right as other persons to utilize mass transportation facilities and services; that special efforts shall be made in the planning and design of mass transportation facilities and services so that the availability to elderly and handicapped persons of mass transportation which they can effectively utilize will be assured; and that all Federal programs offering assistance in the field of mass transportation (including the programs under this Act) should contain provisions implementing this policy.[14]

Given the need and requirement, if not morally then legally, to provide transportation services to the elderly and physically limited, what viable planning approach should be implemented?

Some of the social service agencies have responded to the needs of the physically limited and elderly for transportation services by buying or leasing vehicles for their individual client group's need (i.e., vans, mini-buses). Through a preliminary phone interview, some agencies because of their access to such vans, said that transportation needs for their clientele had been solved. However, they have failed to realize that the agencies usually only operate within the eight-hour working day, an eight-hour consciousness. Little thought was given to other diverse activities or the need for independence from the agency.

Social service agencies which deal with the elderly and physically limited often respond in ameliorative ways which may be detrimental to the real interest of the client. For example, a proposal by the State of West Virginia had forwarded a transportation system which "In serving aged and disabled individuals, the West Virginia Department of Welfare has designed its programs along a continuum of care to allow people to stay safely in their own homes as long as they desire."[15] This proposal was endorsed by the Governor and Commissioner of the Department of Welfare. Such a solution responds to the answer that many people who are elderly or disabled are afraid or uncomfortable in public situations. Such an approach may seem humane but it strengthens the veil of isolation which we are trying to cast away.

Before establishing an effective planning approach for transportation services for the elderly and physically limited, one must become aware of the sensitive issue of a segregated system versus an integrated system. A segregated transportation system is usually defined as one that is designed especially and usually exclusively for those persons with special mobility needs. Such a system can be the only bus system or a supplement to an existing system. The "Dial-A-Ride" bus is one such system. This is a door-to-door system in which one calls the "dial-a-ride" bus in the morning or the day before, to arrange a time and place to be picked up and delivered to one's destination.

An integrated system is one which adapts the existing bus system to accommodate the elderly and physically limited. This type of system has been well supported throughout this community. Many people feel that a separate system is not only uneconomical but also that such segregation is against the civil rights of every citizen. A planning approach, then, will have to resolve this issue.

In light of these sensitive issues, let us not fall into the habit of thinking of single causes and single solutions. Our culture responds to its problems in a solution-minded way without clearly understanding the dynamics of the problem. "Put a lift on every bus to make the system totally accessible" (a call for an allegedly integrated system) has been the proposed solution voiced by acti[illegible] and concerned citizens (see Appendix B). Let us, however, more clearly define the goal, that of making the system "totally accessible." A "lift" on every bus will not make the present bus system totally accessible to the blind, the mentally retarded, the cancer patients suffering from the side effects of cobalt treatments, or to those persons suffering from emphysema. An effective planning approach must realize that different persons require different solutions to meet their varied needs. Only by first being problem-oriented, can we identify the problems in a comprehensive way which is the basis for a comprehensive and therefore effective solution.

In conclusion, a transportation planning approach must take into account the needs of all persons from birth to death--an approach which is comprehensive in problem definition and solution. Clearly, the overriding dictum to the resolution is that all persons have an opportunity for a wide range of life choices. Mobility is a necessary precondition for these life choices.

FOOTNOTES

1. Rusty Blake, was project coordinator for "Project Mobility," Portland, Oregon. Personal conversation, November 9, 1973.

2. Vine Deloria, Jr., Custer Died For Your Sins, p. 190.

3. Erdman B. Palmore, "Measuring the Quality of Life Among the Elderly," Independent Living for Older People, p. 99.

4. Jack Weinberg, "Self Imagery and Independent Living," Alternatives to Institutional Care for Older Americans; Practice and Planning, p. 143.

5. Ibid., p. 145.

6. Joseph T. Weingold, "Unbinding the Homebound Through Mobility," Rehabilitation Record, (July-August 1972), p. 12.

7. Ross, Murray G. from his book Community Organization, as quoted in "Community Development and Community Planning," Journal of the American Institute of Planners, (July 1967), p. 261.

8. Lewis Mumford, Urban Prospect, p. 107.

9. Howard R. Ross, "New Urban Transportation Technology and the Transit Dependent," Conference on Transportation and Human Needs in the 70's, (June 19-21, 1972), p. 27.

10. Frances M. Carp, Ph.D., "Transportation and Later Maturity," Conference on Public Transportation and the Elderly (September 7, 1971), Florida, p. 4.

11. Robert Morris, "The City of the Future and Planning for Health," as quoted in With Man In Mind, p. 150.

12. Larry Craig, Transportation on Ice, (unpublished speech, 1973), p. 1.

13. Ibid., p. 1.

14. Ibid., p. 2.

15. Arch A. Moore, Jr., Transportation Remunderation Incentive Program, (Proposal by the State of West Virginia, June 4, 1973), p. 8.

CHAPTER III

TO A HIGHER LEVEL OF AWARENESS

A. Introduction

Much of the political stance on the issue of making transportation service available to the physically limited and elderly has revolved around the lift. The "lift," if installed on every bus will make the system "totally accessible." It is rather short-sighted, if not naive, to think a technical solution will solve the entire problem, without demanding a social change of values and a reclaiming of morality. It is with this thought that this study effort has attempted to go beyond the data. It was the goal of this study not to simply present a publication of statistical facts, but also to act as a change agent which would bring about a higher level of understanding and reflection on the part of the community about the mobility problems of the target population.

In an effort to bring about such a heightening of awareness, many activities were planned. These included an agency workshop (those agencies that interact with the target population), a workshop with the blind, a training session with the mentally retarded, and three training sessions for the elderly. Included also as an awareness tool were three newspaper interviews and the publication of this report. The specific objectives of these activities, a description of events, and an evaluation of effectiveness follow.

B. Agency Workshop

On October 18, 1973, a workshop was conducted with representatives from social service agencies who deal directly and/or indirectly with the target population.

Objectives

1) To provide the arena within which agency representatives can clearly define the mobility problems experienced by the target population beyond their immediate clientele (i.e., those agencies dealing with persons who are paralyzed can begin to understand the problems of the blind, mentally retarded, etc.).
2) To introduce the study to the agencies and establish a credibility between agencies and planner and to promote intra-agency and agency-planner cooperation and communication.
3) To establish the role of the agencies and the clients in the study process.
4) To draw from agency expertise and experiences in defining the problem and its possible solutions.
5) To set the stage for a comprehensive approach in the planning process.

Description of Activities

Invitations were mailed to sixty-four agencies, including a statement of the study proposal and general information about the workshop purpose,time, place, etc. In addition, two coordinators, four group facilitators, and two professional planners from The Lane Transit District attended the workshop to assist in activity coordination and facilitation. Materials included two L.T.D. buses, building at the Eugene Fair Grounds, aids (i.e., canes, crutches, wheelchairs, walkers, blindfolds, etc.) and tables for task force groups.

The workshop was organized into two phases of activity: Phase one involved having the participants assume a physical limitation by using one of the aids and then attempting to board one of the two buses. In so doing, they were to take note of the difficulties they and others were experiencing during this task. This was the problem definition phase of the workshop.

Phase two involved having the representatives divide into four task force groups and to plan a transportation system in which all the inhabitants in the city were either blind (group #1), elderly (group #2), in wheelchairs (group #3), or used a cane, crutches, brace(s), or walker (group #4). This was the solution phase of the workshop.

A final group meeting was held at the end of the second phase in which reaction to the mobility problems, the planning approach, and workshop effectiveness were voiced.

Evaluation and Conclusions

Of the sixty-four agency representatives invited, eleven agencies were represented with twenty-five persons attending. Although the representation was low, it was revealed later that not more than fifteen to twenty agencies dealt with the target population directly. We had not anticipated that any of the participants would themselves be physically limited but a few were. Some were in wheelchairs, one was blind, and two were minimally ambulatory.

In both phases, the four group facilitators were very effective in recording responses and suggestions as to the operational and physical barriers met. In addition, the facilitators, as well as many of the participants, were effective in keeping the spirit of the workshop going by soliciting involvement by all of the participants throughout phases one and two.

Each phase lasted about forty-five minutes. The phase two task force groups varied in intensity of participation with differing degrees of success.

During the workshop, staff from the PED (Program Evaluation and Development) at the University of Oregon, video-taped the workshop for evaluation of its effectiveness by students under the PED program. This video-taping proved very helpful for evaluation and rarely inhibited persons participating in the workshop.

In conclusion, the mailing of the study proposal prior to the workshop helped define the study direction as well as aid the representatives in formulating further questions, some that had yet to be asked. There was an attempt to give aids to the representatives other than the ones used by their usual clientele. This helped broaden their perspective of the problem and its dynamics. The solution phase was very effective and many of the suggestions in design consideration are entered in Chapter V.

The spirit of the entire workshop facilitated the constructive formation of questions and the understanding of the problems of mobility for the target population. During the final aggregate meeting, however, a time provided to again exchange ideas and thoughts as an entire group, instead provided a stage for advocacy speeches for particular points of view. Some of the comments seemed to run counter to the intended objectives of the workshop.

C. Training Session for the Mentally Retarded

The training session for the mentally retarded took place over a two-day period, January 31 and February 1, 1974. The participants were students from the Pearl Buck School, Eugene, Oregon.

Objectives

1) To identify physical and operational barriers

experienced by the mentally retarded so as to alleviate such problems through design standards.

2) To provide an opportunity for the mentally retarded to learn to use the bus system.
3) To draw from the expertise of the Pearl Buck staff in the design of a barrier free transportation system.
4) To provide the opportunity to instill confidence on the part of the mentally retarded students as well as promote parental confidence in the child's ability to perform the task.
5) To heighten the planners' awareness in trying to understand the problems of the mentally retarded and their relation to the bus system.
6) To provide a model for future training sessions for the mentally retarded.

Description of Activities

The two-day training session for the mentally retarded was conducted in two phases. The first phase was conducted on January 31, 1974, in which the children were directed by Mick Wagoner, Pearl Buck teacher, through the process of boarding and unboarding a bus. This was first done vocally through questions and answers with the group and later done physically by using a mockup of a bus within the classroom. Tokens and transfers were distributed to the students and their use explained.

The second phase took place February 1, 1974, in which a L.T.D. bus was driven to the Pearl Buck School to be boarded by the children. A total of four assistants, two planners, and forty mentally retarded children boarded the bus. Each was given a token before boarding and was sent through the normal process of boarding, paying, and sitting on the bus. Each was to ask for a transfer after depositing the token.

After all the pupils were boarded, the bus traveled to the Eugene downtown mall. At this point, all persons exited from the bus. After all had exited, they again repeated the boarding process; however, this time using the transfer rather than the token. The bus, loaded once again, traveled back to the Pearl Buck School. They unloaded at this point.

Throughout the training session, the two planners noted any problems and barriers that the pupils confronted.

Evaluation and Conclusions

In all, the training session was educational for most of the children, yet most would require one-to-one training if they were to become independent users of the bus system. For many, it provided an exciting outing. Presently, over twenty mentally retarded pupils use the city bus system.

Of all the pupils, three required assistance due to their physical mobility problem. However, all the students helped each other in the entire process of using the bus system. They did not hesitate to help someone who was physically disabled. As a group, they were mutually reinforcing and supportive, but also were not hesitant to correct when they felt correction was needed. It was an experience and a model of love and concern which the society at large could begin to emulate with wide-ranging and beneficial results.

Our intent was to have some of the parents participate in order to illustrate that the pupils could in fact ride the bus system by themselves. However, the staff at Pearl Buck felt that more often than not the presence of the parents would inhibit the educational process of the students. A later session, one including the parents, was suggested, after the students were familiar with the boarding and unboarding process. It was expressed by the Pearl Buck staff that similar training sessions at intervals throughout the year (approximately every six months) would be very educational for their students.

Physical barriers included:

1) Bus must be pulled right up to the curb since children, and those persons physically limited, may not notice the gap between the first step and the curb. This is important for boarding and unboarding. Visual and perception problems were noted here.
2) There is a need for a lower hand railing for children. Railings are also needed which extend out beyond the plane of the bus door.

3) Those persons with physical limitations had difficulty grabbing hand railings, but did use them as supports. Hand railings, flat or parallel to the floor with rubber grips should alleviate this problem.

4) It was necessary to relocate the waste paper basket which sets in front of the fare box as it was a hazard for those physically limited.

5) Many mentally retarded students had trouble identifying the fare box. One student placed his token in the top of the fire extinguisher. There needs to be a color differentiation in the front part of the bus so as to distinguish the coin slot from the rest of the bus instruments.

6) Many students experienced difficulties in dropping the token into the narrow slot. A larger slot or funnel shaped entrance would alleviate this problem.

7) By mistake, we distributed senior citizen tokens at the first phase of the training session. Many students, those fairly young and those physically limited experienced problems in holding on to and handling the smaller coin. These should be equally as difficult to handle for senior citizens. A larger coin for the senior citizens and physically limited is thus suggested.

8) Bus drivers should allow time for the pupils to ask for a transfer, but if they begin to sit down before asking, the driver should ask if they need a transfer. It would also be helpful if the driver asked the mentally retarded pupils where they were to get off. If the individual did not ring the bell, the driver could remind the person of his destination.
9) A pass system would eliminate barriers associated with the use of the fare box.

D. Training Sessions for the Elderly

Three training sessions were conducted by the study planners. The sessions were held at the Nutrition for Elderly Luncheons. The locations and dates were: Sorgenfrie, January 31; Willamalane Memorial Building, February 6; and First Christian Church, February 11.

Objectives

1) To educate the elderly about the mechanics of using the bus system.
2) To provide the opportunity for the elderly to ask questions about the bus service and to receive their input and ideas about barriers experienced and their suggested solutions.
3) To instill confidence in the elderly in their ability to use the system.
4) To provide impetus to ride the bus and use it daily.
5) To present the elderly possible future changes which may be taking place (i.e., door-to-door service,

bus stop shelters, new downtown terminal, etc.).

6) To provide a model for future training sessions.

Description of Activities

At each center lunch is served for the senior citizens through the program on Nutrition for Elderly. The training sessions followed lunch. The training session included distribution of system maps, sample transfers, a list of areas where the senior citizens could sign up for R.S.V.P. cards (Retired Senior Volunteer Program--giving them identification for proof of age over 62--in which they are privileged for a reduced fare) and locations where tokens could be purchased.

A slide show followed with the two planners providing the description of slides and the slides' relationship to the session. The training session covered the following topics.

1) Introduction to the system and its selling features (convenience, clean, soft music, courteous drivers, etc.).
2) A tracing through of the potential bus they would be using for their particular area, including an understanding of scheduling, station identification, routing and bus identification.
3) Explanation of tokens, their use, and policy on reduced fare rates and token purchase locations.

4) An explanation of the R.S.V.P. card and its use. An R.S.V.P. representative was present at each training session to issue cards after the training session.

5) Explanation of transfers and their use.

6) The depicting of other senior citizens using the bus to help them gain confidence in their ability to use the bus. (One 86 year old gentleman shown in the slide presentation used the bus every day, rode horses whenever he had the chance, and indicated an active life style).

7) To show the possible future changes which may take place within the bus system. This included a possible dial-a-ride bus, bus stop shelters, and bus facilities for those persons with physical limitations.

Each slide show took about fifteen minutes with about fifteen minutes taken up with questions and answers.

Evaluation and Conclusions

The first slide show was too long so the show was cut down to fifteen minutes from twenty-five to thirty minutes. In total, approximately one hundred and thirty-five elderly attended the luncheons of which about eighty percent stayed for the training sessions. As an indication of the success of the session, over one hundred system maps were passed out (most of the participants did not know such a map existed).

Two hundred twenty-eight senior citizen tokens were sold and twenty-five persons signed up for R. S. V. P. cards.

Overall, it is difficult to estimate the training sessions' effectiveness in meeting the designed objectives, but many favorable comments about the training sessions gave a favorable indication of their worth.

E. Workshop With the Blind

On February 2, 1974, a workshop was conducted with members of the Federation of the Blind. The session continued for approximately two and a half hours at The Friendly House, 24th and Kincaid Street.

Objectives

1) To identify the operational and physical barriers experienced by the blind.
2) To provide a medium for client input into the design of future transportation systems.
3) To provide an arena for emergent ideas.
4) To heighten the planners' perspective of the mobility problems the blind experience.

Description of Activities

The activities simply included a session in which the group mentally went through the boarding to exiting processes involved in using the bus. This process also included problems with scheduling, information dissemination, terminal design, and other pertinent factors specific to the blind and their mobility problems. Attention was given to enticing other blind persons to use the bus system, to educate them as to the operations of the system, and to elicit their input into the study.

Evaluation and Conclusions

The persons attending included two planners, one person from Vocational Rehabilitation, five members from The Federation of the Blind, and two persons not actually affiliated with any blind agency. Due to a conceptual conflict in regards to the independence of the blind, the Council of the Blind indicated that they were not necessarily interested and therefore did not attend.

This workshop was most effective as well as enjoyable. The title, "There's a seat over there," which is the typical response by a bus driver in an attempt to help a blind person get seated, helped set the spirit of the workshop. The suggestions and conclusions that follow come in the order of the program design (i.e., boarding through exiting, terminal design, and special problem areas).

Bus Stop

Bus stop identification was basically accomplished by standing along the route and waiting for the bus to come by.

In most instances, the bus driver can recognize those persons who are blind through previous acquaintance. However, it is most effective for the blind to stand about nine feet from the corner so as to separate oneself from other persons using the sidewalk. The blind should face the direction of the oncoming bus and make his white cane visible. If a problem arises for the bus driver in which he cannot stop at that point in which the blind person is standing, the driver should either stop and quickly open the door and tell the blind persons to go to the desired boarding location or move on by and call back. The driver should not honk the horn in any situation, since this is interpreted as meaning to come forward.

If a blind person is on a route where more than one bus travels, all drivers should stop and simply call out the bus route.

In the downtown mall boarding area, drivers should try to identify the blind and offer assistance. The blind can find stations "A," "B," and "C," since each station is divided by a change in elevation--a driveway. Some assistance is required only as to the identification of the desired bus within the station location.

The bus stop sign posts should have an identification mark about shoulder height, such as a rounded section on a square post. This will identify the bus stop sign for the blind.

Boarding

Boarding will be made easier by providing a fluorescent strip at the edge of each step since many of the visually limited could see this reflection. It is very important that the bus driver pull completely up to the curb as the blind cannot distinguish gaps between the curb and the first step.

Fare Box

In order for the blind to locate the fare box and its coin slot, three solutions were suggested. First, the hand railin should follow directly to the coin slot as a guidance tool. Second, make the coin slot area fluorescent or bright in color in relation to the other colors in the front of the bus so as to distinguish it from other vehicle instruments. Third, the coin slot should be larger with a funnel shape to better receive the coins.

Seating

Seating is best accomplished by having the bus driver direct the blind to the most forward seats facing inward: the one directly behind the stair well or the seat directly behind the driver. This gives the blind the opportunity to ask questions about their desired stop as well as allow easy exit. In order to help relieve the embarrassment of seating for the blind, the driver should ask those persons seated in one of the two front seats to please move so as to give the blind a seat. By having the blind use the front seats, they avoid tripping over other people's feet as they get on and off the bus. For the blind located in the rear of the bus, it is helpful to follow the overhead railing to the front of the bus. This gives direction as well as an identification of the center of the bus.

Disembarking

In order to identify the area to disembark, the blind should simply tell the bus driver of the desired stop. When stopping the bus, it is helpful for the bus driver to keep the doors shut until the blind individuals are ready to descend in order to keep other people from boarding and confusing them and pushing them back. The driver should not stop in front of utility poles, mail boxes, trees, etc. If it is necessary to do so, he should simply tell the person of its location. If the driver overshoots the blind person's desired stop, he should tell him. In giving directions to the blind, the driver should use North, South, East, and West as direction indicators.

Terminals

In designing terminals, overhead phones or any other overhead objects should not be used as the blind identify barriers by the ground floor obstructions. The idea of a "hot line" to pick up and give one the needed scheduling information was very well received. No sharp or square corners should be used in the terminal or boarding areas. All corners should be rounded. If there is to be an information booth, the rest rooms should be located within close proximity.

Problem areas

The Franklin Blvd. bus stop area and the Lane Community College were noted as being confusing for the blind.

In addition to the above identified problems and solutions, the Federation of the Blind has offered that they develop a checklist which other blind individuals could use in helping them use the bus system. In addition, three representatives will ride the bus system as a trio and note the problems they experience. Furthermore, a transportation coordinator will be appointed within the Federation of the Blind to further communicate the ideas and experiences as this adapting the system to the blind is an educational venture on the part of the blind, the bus drivers, and Lane Transit District, as well as the general public.

F. Contacts, Interviews and Publication

The second phase of "awareness" took place through various personal contacts, interviews, and publication. It is through varied contacts that we as planners were able to enlighten groups of citizens of the mobility problems of the physically limited and elderly. This contact also provided a communication channel for feedback and aided in identifying other informative contacts. This list included Social Security Administration, Mental Health Center, Department of Welfare, and more, many of whom are included in the surveying process.

In addition, because of the wide circulation, newspapers were sought to conduct interviews with the study planners (see Appendix B). In the interviews, an attempt was made to briefly explain the mobility problems of the physically limited and elderly, 2) clarify any political misunderstandings about the direction of the study and intent, 3) to stimulate other citizens to begin to contemplate these problems and needs and 4) provide a recognition of the study's authenticity for client acceptance and obligation to survey completion and support.

It was felt that the surveying process, with its specific questions caused the elderly and physically limited to reflect upon their mobility problems and examine their own state and potential state of being.

Finally, the writing of this report and the contents which make up this report were designed to acquaint the reader with the entire problem--physical, social and psychological. This report is an attempt to be more than a simple publication of data, but also to invoke thinking and reflection as well as create a sympathetic understanding of the mobility problems of the physically limited and elderly.

CHAPTER IV

CHARACTERISTICS OF THE TARGET POPULATION AND IMPLICATIONS FOR VEHICLE AND SYSTEM DESIGN

A. Introduction

This chapter investigates some of the general characteristics of the target population and the vehicle and system design they elicit. Specifically, this includes the extent of the population, extent and type of physical impairment, and the type of physical and operational design changes needed if this population is to truly have a transportation alternative.

Different people experience varying degrees of immobility. This immobility is dependent upon three factors: physical ability, the ability to get around; economic ability, the ability to pay for the desired mobility; and mental ability, the desire and ability to cope with social situations involved in traveling. Each factor comes into play with varying degrees of intensity. If the present transit system is to become "totally accessible," all three barriers must be overcome.

The information that follows is drawn from surveys of the physically limited and elderly of the Eugene/Springfield Metropolitan area. The surveying was conducted during the months of December 1973 through February 1974. The surveys were obtained either by personal interviews or mail-outs, depending on agency preference.

The target population was divided into three aggregate age groups with which they could be compared to available census data for verification. The age groups are 15 years and less, 16-64 years, and 65 years and older.

Those persons disabled as the result of a chronic condition (a long-term medical condition) or impairment, for more than six months, and less than 65 years of age, were defined as physically limited. Those persons over the age of 65 years with a physical limitation as a result of the natural aging process and/or chronic condition, were defined as elderly.

The term "handicapped" has been widely used in this society, although in many instances inappropriately. A person is handicapped in regard to bus service only if he or she cannot utilize the service due to the above mentioned barriers. Those who do ride the present bus system were not considered part of the sample population since the barriers have obviously been overcome. However, many people using the present system do experience difficulties, the extent of which has been identified in the bus driver surveys.

B. Characteristics of the Target Population

The general characteristics of the target population elicit several inferences in regard to the needed changes of the present bus system if it is to become accessible by all. Results from the Transportation Alternative sample indicate that approximately 18.9 percent of the population in the Eugene/Springfield area over the age of 15 are experiencing limited mobility due to physical limitations.

TABLE 1.

THE DISTRIBUTION OF PHYSICALLY LIMITED AND ELDERLY IN THE EUGENE/SPRINGFIELD AREA

Age	Total Population	Total Limited Mobility	Percent Limited Mobility	Percent of Metro Population
Less 15	30,791	N/A	N/A	N/A
16 - 64	66,058	7,833	11.8%	10.4%
65 & over	9,053	2,987	33.3%	8.5%

Source: Oregon Census, 4th Count, Item #52, Not Disabled and Disabled or Handicapped Labor Force Status, 1970, and results from the Transportation Alternative surveys.

Employment

In this society, a person's worth and sense of accomplishment are most strongly established through his or her employment. On the national level, 36 percent of the physically limited between the ages of 17-64 were members of the labor force.[1] In the Eugene/Springfield area, 34.9 percent of the physically limited between the ages of 16-64 were members of the labor force.[2] Of those physically limited in the labor force between the ages of 17-64 on the national level, 89 percent are employed whereas locally in the 16-64 age group, 86.9 percent are employed.[3]

Employment and Education

Employment opportunities for the physically limited are more limited than the population as a whole when educational attainment is low. The Transportation Alternatives sample indicates that 33 percent of the high school graduates are members of the labor force compared to 75 percent on the national level.[4] Locally, 11.7 percent of the dropouts are members of the labor force as compared to 62 percent nationally.[5] Clearly, those persons with a high school education on the local level have almost three times the opportunity to be a member of the labor force. This would indicate that mobility to educational facilities is as important as mobility to work place for the physically limited. Those persons defined as elderly, 65 years and older, are not necessarily considered as a factor in this analysis since the Transportation Alternatives sample indicates that 85.5 percent are retired.

TABLE 2

PHYSICALLY LIMITED LABOR FORCE STATUS BY EDUCATIONAL ATTAINMENT

Transportation Alternatives Sample

Education	Non-Labor Force				Labor Force			
	Retired N = 54		Unemployed Not Looking N = 90		Unemployed Looking N = 16		Employed N = 27	
	N	%	N	%	N	%	N	%
Elementary	13	24.1	12	13.3	4	25.0	1	3.7
Some High School	13	24.1	30	33.3	0	0	4	14.8
High School Grad.	2	3.7	23	25.5	2	12.5	7	25.9
Some College	11	20.4	16	17.7	6	37.5	7	25.9
College Grad.	4	7.4	2	2.2	1	6.3	4	14.8
Advanced Degree	1	1.9	0	0	1	6.3	2	7.4
Other	8	14.8	5	5.5	1	6.3	1	3.7
Missing Observations	2	3.7	2	2.7	1	6.3	1	3.7

Employment and Mobility Limitation

A person's degree of physical impairment also acts as an obstacle to employment. Those persons requiring special aids or human assistance would require special facilities at the workplace, special transportation facilities, and special facilities at educational institutions in pursuit of better job opportunities.

TABLE 3

PERCENT OF PHYSICALLY LIMITED IN MOBILITY LIMITATION CATEGORIES BY LABOR FORCE STATUS

Transportation Albernatives Sample

	Must stay in house N = 2	Need another person N = 39	Need a special aid N = 45	Has no aid but trouble N = 51	Not limited N = 54
Percent non-labor force	%	%	%	%	%
Retired	0	30.8	22.2	25.5	24.1
Not Employed Not Looking	50	41	16.6	16.6	42.6
Labor Force					
Not Employed Looking	50	5.1	15.6	2.0	9.3
Employed	0	7.7	24.4	3.9	20.4
Missing Observations	0	15.4	21.2	.2	3.6
Total	100	100	100	100	100

Table 3 presents a general trend which shows that those persons with the least degree of mobility limitations are more likely to be a member of the labor force. However, special attention should be given to those persons requiring special aids. The use of an aid may require special training and give more mobility therefore to those persons than to persons not using an aid but who do experience trouble moving around the home and city. The fact that 66.6 percent of the Transportation

Alternatives sample persons who experience trouble moving around the house are not employed and not looking can be an indication of agency support which causes disincentives to work.

A person's functional disability is clearly a limiting factor in employment. Certain functions are prerequisite if one is to work, attend school, and use the existing transportation alternatives. In the Table 4 , the ability to navigate inclines, stairs, and move in crowds seem to be some of the most limiting factors.

TABLE 4

PERCENT OF PHYSICALLY LIMITED WITH FUNCTIONAL DISABILITY BY LABOR FORCE

Transportation Alternatives Sample

Functional Disability	Retired	Unemployed Not looking	Unemployed looking	Employed
Percent cannot	%	%	%	%
Go one block	22.2	13.7	25.0	11.1
Go three blocks	40.7	35.1	25.0	14.8
Use stairs	31.5	34.7	31.3	25.9
Navigate curbs	11.1	16.4	12.5	18.5
Navigate inclines	24.1	38.1	0.0	0.0
Sit down, get up	13.0	16.4	18.8	7.4
Stand 15 minutes	38.9	33.7	37.5	7.4
Open doors	9.3	12.3	6.3	14.8
Grasp handrails	3.7	21.0	12.5	11.1
Cross timed intersection	25.9	39.5	18.8	7.4
Move in crowds	25.9	26.9	12.5	7.4

Employment and Self-concept

Much of the theoretical description about self concept and its most powerful effects have been delineated in Chapter II. Further, however, a person's ability to perform as desired in society will have effects on his or her pursuit of employment. When respondents were asked if their physical limitations limited their horizons, 66.8 percent answered yes. This phenomena of self-concept can begin to explain the low number of persons in the labor force (see Table 5) since physical limitations alone only partly account for this figure.

TABLE 5

PERCENT OF PHYSICALLY LIMITED BY AGE AND LABOR FORCE STATUS

Transportation Alternatives Sample

Age	Non-Labor Force		Labor Force	
	Retired	Unemployed Not looking	Unemployed Looking	Employed
Percent	%	%	%	%
16-25	9.7	40.9	26.8	22.6
26-45	12.5	43.8	14.5	29.2
46-64	19.2	55.4	12.3	13.1

Income

Due to the high percent of physically limited not in the labor force, the annual incomes for the physically limited is generally very low. This is also true for the elderly with most of this population retired. This low income compounds the severity of limited mobility by further limiting life's choices. Not only is this income very low, the disposable income is also decreasing due to higher medical costs.[6]

TABLE 6

PERCENT PHYSICAL LIMITED AND ELDERLY BY INCOME LEVEL

Transportation Alternatives Sample

Income Level	Physically Limited	Elderly
Percent	%	%
Under $4.200	85.6	94.0
$4.200-$7,000	7.5	4.0
$7,000-$10,000	3.5	4.0
$10,000 and over	3.4	2.0
	100	100

The income source of the physically limited and elderly is heavily drawn from Social Security and Public Welfare agencies. This begins to support the contention by many disabled persons that there is a need for many to return to work and contribute to, rather than depend on, society for their livelihood.

TABLE 7

PERCENT PHYSICALLY LIMITED AND ELDERLY BY INCOME SOURCE

Transportation Alternatives Sample

Income Source	Physically Limited	Elderly
Percent	%	%
Salary, Wage	14.5	1.8
Employer Pension	1.6	1.8
Veteran	4.8	5.4
Soc. Security Pension	39.8	73.9
Public Welfare Income	33.9	16.2
Other Disability Income	3.8	0.0
Other	1.6	0.9

When we begin to look more specifically at the degree of dependence on social service agencies, we can begin to see a pattern. On Table 8, we can see that 61.7 percent of the sample population who are not employed and not looking are receiving social security benefits. Another 21.7 percent not employed and not looking are receiving Public Welfare benefits.

There is a possible disincentive for many of those physically limited not to return to work. The extent of this disincentive, however, is difficult to assess without further investigation into each specific case. Surely, lack of transportation and lack of facilities at work locations to employ the disabled would add considerably to this disincentive.

TABLE 8

PERCENT OF PHYSICALLY LIMITED LABOR FORCE STATUS BY INCOME SOURCE

Transportation Alternatives Sample

Employment Status		Salary	Employer Pension	Vets.	Soc. Sec. Pension	Pub. Welf. Income	Other
Percent		%	%	%	%	%	%
Non-Labor Force							
Retired	73	4.1	1.4	7.1	35.6	50.7	4.1
Not Employed Not Looking	60	5.0	0.0	5.0	61.7	21.7	6.6
Labor Force							
Not Employed Looking	13	0.0	15.4	0.0	38.5	38.4	7.7
Employed	26	80.8	0.0	0.0	11.5	3.8	3.8

Income and Transportation

Due to the generally small spatial distribution of the Eugene/Springfield area, transportation costs as a percent of income were very minimal. For the physically limited with minimal income under $4,200, 4% of their income went toward transportation costs. For the elderly with minimal incomes under $4,200, only 1.6% of their income went to transportation costs.

Trip Patterns

Trip patterns have important implications for the routing of any bus system which would be established to meet the needs of the target population. Table 11 indicates shopping, school, and work as activities which require more than three trips per week by the physically limited. For the elderly, recreation,visiting and church become important outings requiring more than one trip per week. Equally important for analysis of Table 9 is the number of persons who responsed. Responses to shopping for both the elderly and physically limited was high in comparison to other activities, thus suggesting the importance of shopping. The low response may suggest that some persons do not or rarely take any trips during the week.

TABLE 9

AVERAGE NUMBER OF TRIPS PER WEEK BY PHYSICALLY LIMITED AND ELDERLY BY ACTIVITY

Transportation Alternatives Sample

Activity	Total Resp.	Physically Limited	Total Resp.	Elderly
Shopping	153	3.4	126	.8
school	44	3.4	--	--
Recreation	37	1.8	11	2.2
Med./Presc.	19	.6	27	.6
Church	43	1.6	21	1.2
Visiting	53	1.9	16	1.6
Work	16	4.6		--
Other	13	.9	9	1.1

C. Implications for Vehicle and System Design

Degree of Limited Mobility

A factor of critical importance in the designing of a transportation system for the target population is knowledge of degree of limited mobility that the population is experiencing. Table 10 shows that approximately 23.0 percent of the physically limited use some type of special aid and, therefore, the design of a transportation system would have to accommodate these aids. Even if alterations were made on the vehicles to accommodate the use of special aids, 19.9 percent of the physically limited would require a special assistant. Those persons among the survey population who responded that they were bedridden were excluded from the sample population, due to their special requirements which were felt to be beyond this study. However, if later in the survey they indicated that they did have a degree of mobility (a self-contradiction) they were included as part of the sample population. The 2.0 percent indicated in Table 10 is therefore not representative of the entire population.

TABLE 10

PERCENT PHYSICALLY LIMITED BY DEGREE OF MOBILITY

Transportation Alternatives Sample

Percent	%
Bedridden	2.0
Confined to House	1.0
Needs Human Assistance	19.9
Uses Special Aid	23.0
Unaided but has Difficulty	26.0
No Limitations	27.6
	0.5

Table 11 shows that the elderly are similar in their mobility limitations. However, 24.7 percent of the elderly sample needed human assistance as compared to 19.9 percent of the physically limited who considered themselves having no limitations had also indicated an inability to perform one or more of the functional disabilities on Tables 16 or 17, or responded that they had one or more disabilities as indicated on Tables 12 or 13. Table 11 also shows that 19.3 percent of the elderly considered themselves confined to the home. Of the three barriers: physical, economic or mental, it is difficult to determine which is the main factor in their confinement and the resultant isolation.

TABLE 11

PERCENT ELDERLY BY DEGREE OF MOBILITY LIMITATION

Transportation Alternatives Sample

Percent	%
Bedridden	7.2
Confined to House	19.3
Needs Human Assistance	24.7
Uses Special Aid	22.3
Unaided but has Difficulty	13.9
No Limitations	12.8

D. Disability Variations and Implications for Design

If a transportation system is to become "totally accessible," all functional disabilities should be considered in the design of the system. Due to funding limitations, however, most transit systems must expand, both quantitatively and qualitatively, in incremental segments. The type and extent of functional disabilities can begin to establish a priority of implementation in vehicle and system design adaptations. Many adaptations of the bus and system can be relatively inexpensive, such as those for the blind which would include bus driver training, illuminated strips on each step, and a hand railing which leads directly to the fare box coin throat. Some adaptations of the bus could be very expensive such as lifts on each bus for those persons with non-ambulatory disabilities. Each physical limitation should, however, be dealt with as equitably as possible.

Tables 12 and 13 show that 21.5 percent of the physically limited and 33.3 percent of the elderly sample population experience some type of visual impairment. Vocational rehabilitation has indicated that approximately 150 persons in the Eugene/Springfield area are defined as blind, with over 50 percent of these persons over the age of 62. Large sized print on schedules and bus identification signs would help those persons with limited vision but not necessarily the blind.

Tables 12 and 13 also indicate that a large proportion of both the physically limited and the elderly suffer from a heart condition, tiring easily, shortness of breath or a combination of these. This would have particular implications for terminal design relative to crowd flow and controlled resting areas, and the time allotted to make a transfer from one bus to another.

TABLE 12

PERCENT PHYSICALLY LIMITED BY DISABILITY

Transportation Alternative Sample

	One Limitation 172	Two Limitations 103	Three Limitations 70
Percent	%	%	%
Visual	21.5	0.0	0.0
Hearing	4.7	2.9	0.0
Speech	2.9	1.9	0.0
Heart Condition	14.5	7.8	0.0
Hypertension	5.8	4.9	0.0
Shortness of Breath	8.7	10.7	2.9
Tire Easily	10.5	29.1	12.9
Arthritic	5.2	19.4	32.9
Fracture	0.0	1.9	5.7
Paralysis	9.9	6.8	10.0
Other	16.3	14.6	35.7

TABLE 13

PERCENT ELDERLY BY DISABILITY

Transportation Alternative Sample

	One Limitation 144	Two Limitations 95	Three Limitations 62
Percent	%	%	%
Visual	33.3	0.0	0.0
Hearing	9.7	9.5	0.0
Speech	1.4	1.1	1.6
Heart Condition	18.1	14.7	3.2
Hypertension	4.2	5.3	1.6
Shortness of breath	3.5	7.4	4.8
Tire Easily	4.9	27.4	11.3
Arthritic	4.9	16.8	48.4
Fracture	2.8	4.2	11.3
Paralysis	2.1	2.1	11.3
Other	15.3	11.6	6.5

E. Aid Variations and Implications for Design

Table 14 and Table 15 show that 40.6 percent of the physically limited and 36.8 percent of the elderly use a wheelchair. Clearly, there is a need for some type of lifting device on the bus to accommodate the wheelchair. Interior design of such a vehicle must include provision for wheelchair movements and securing. That a high percentage of the target population use of a cane would direct attention to the design of hand railings and stanchions throughout the bus, both at the stair well and at the seat.

TABLE 14

PERCENT PHYSICALLY LIMITED BY AID USED

Transportation Alternatives Sample

	Use One Aid 96	Use Two Aids 40
Percent	%	%
Seeing-Eye Dog	3.1	7.5
Cane	29.2	0.0
Hearing Aid	2.1	0.0
Wheelchair	40.6	2.5
Crutches	3.1	5.0
Brace	7.3	15.0
Human Assistance	14.6	60.0

TABLE 15

PERCENT ELDERLY BY AID USED

Transportation Alternatives Sample

	Use One Aid 114	Use Two Aids 39
Percent	%	%
Seeing-Eye Dog	0.0	0.0
Cane	37.7	0.0
Hearing Aid	5.3	10.3
Wheelchair	36.8	5.1
Walker	4.4	17.9
Crutches	3.5	2.6
Brace	0.9	0.0
Human Assistance	11.4	64.1

F. Functional Disability and Implications for Design

In the design of a system such as a door-to-door system, a fixed-route, or a combination of both, functional disabilities and the extent of these must be known. Those persons who could not walk or move up to three blocks could not use the present bus system even if it were adapted for their special physical limitation. Tables 16 and 17 show that 30.2 percent of the physically limited and 61.6 percent of the elderly could not walk or move three blocks. Such a limitation would dictate a demand-response system Whereas those persons who could move three blocks but could not use stairs would dictate an adapted fixed-route system. The fact that 29.1 percent of the physically limited and 59.5 percent of the elderly could not wait, standing, for 15 minutes would dictate the need for seating areas at bus stops and transfer points. If this functional disability is combined with an inability to walk or move up to three blocks, then these persons would be best served by a demand-response vehicle.

Since 47.9 percent of the elderly cannot move in crowds, much care must be taken in the design of terminal areas; the crowd flow and control, and the separation of activities. If the terminal or bus stop area is located along busy streets, consideration should be given to the time allotted for crossing these intersections. As indicated in Tables 16 and 17, 24.7 percent of the physically limited and 54.4 percent of the elderly cannot cross the intersections in the time allotted by the signals.

TABLE 16

PERCENT PHYSICALLY LIMITED BY FUNCTIONAL DISABILITY

Transportation Alternatives Sample

	Yes	No	With Difficulty	
Percent	%	%	%	
Go One Block	67.8	17.8	14.4	100%
Go Three Blocks	50.6	30.2	19.2	100%
Use Stairs	36.0	30.9	33.1	100%
Navigate Curbs	67.6	15.9	16.5	100%
Navigate Inclines	50.6	19.2	30.2	100%
Sit Down,Get Up	72.2	14.8	13.0	100%
Stand 15 Minutes	49.7	29.1	21.1	100%
Open Doors	67.3	13.3	19.4	100%
Grasp Hand Rails	79.0	12.6	8.4	100%
Cross Timed Intersections	56.3	24.7	19.0	100%
Move in Crowds	53.5	19.2	27.3	100%

TABLE 17

PERCENT ELDERLY BY FUNCTIONAL DISABILITY

Transportation Alternatives Sample

	Yes	No	With Difficulty	
Percent	%	%	%	
Go one block	43.2	41.9	14.9	100%
Go three blocks	21.2	61.6	17.1	100%
Use Stairs	23.4	50.6	26.0	100%
Navigate Curbs	45.9	36.3	17.8	100%
Navigate Inclines	38.4	38.4	23.2	100%
Sit down, get up	60.4	26.8	12.8	100%
Stand 15 minutes	22.9	59.5	17.6	100%
Open Doors	46.0	38.0	16.0	100%
Grasp Hand Rails	64.9	26.4	8.8	100%
Cross timed Intersections	33.3	54.4	12.2	100%
Move in crowds	32.9	47.9	19.2	100%

Suggestions for improvement in the present bus system were elicited on the Transportation Alternatives surveys. Table 18 shows the percent of suggested changes by category. Of those who took the survey, 70.8 of the physically limited and 95.7 percent of the elderly did not give any response to this answer. The majority of the respondents have probably never used the bus system, which would account for their lack of response.

TABLE 18

PERCENT PHYSICALLY LIMITED AND ELDERLY
SUGGESTIONS FOR IMPROVEMENT

Transportation Alternatives Sample

Category	First Suggestion	Second Suggestion
Percent	%	%
Vehicle Design	34.9	12.5
Information Sources	6.4	6.3
Routing/Scheduling	29.4	25.0
Terminal/Shelter Design	11.0	25.0
Personal Assistance	3.7	12.5
Other	14.7	18.8

G. Difficulties Experienced by Present Bus Patrons

In an effort to understand some of the difficulties experienced by those persons already using the bus system, surveys were conducted with the Lane Transit District bus drivers.

Of the 109 drivers, 57 returned the survey. The survey was designed to

1) Gain bus driver input into the planning process through their own experience and possible solutions.
2) To identify the extent of persons with physical limitations, of all ages, presently riding the bus system.
3) To identify those barriers experienced by persons presently riding the bus.

On the average, of those persons over the age of 65 riding the bus, 20 persons per week, as viewed by the driver, experienced difficulties in boarding the bus. The range of those experiencing difficulties was from 0 - 200 per week. Such routes as the Campbell Senior Center run could account for this wide range. Those persons under the age of 65 experiencing difficulties in using the present bus system, include approximately 5 per week per bus driver.

TABLE 19

PERCENT OF PHYSICALLY LIMITED AND ELDERLY EXPERIENCE DIFFICULTIES USING THE PRESENT BUS SYSTEM

Transportation Alternatives Sample

Functional Disability	Average	Range of Persons
Percent	%	%
First Step Too High	35.6	0-100
Trouble Grabbing Hand Railings	18.4	0-100
Trouble Placing Coin in Slot	7.6	0- 90
Problems in Getting In and Out of Seat	3.1	0- 20
Trouble Sliding on Seat While Bus is in Motion	1.0	0-100
Trouble Reaching for Stop Buzzer	37.3	0-100

Table 19 shows that having the step and the stop buzzer (pull cord) too high are the main problem areas for present riders. Strong consideration should be given to hand railing design as 18.4 percent experience difficulties in using them.

Solutions from bus drivers included such things as design a lower first step, or to give persons using the system at night reflectors (presently there are few designated bus stops.) In the absence of marked stops, passengers simply wait on the path of the bus route and flag down the bus;

replacing the stop buzzer cord with a switch on the lower part of the window for signaling a stop, and the redesign of hand rails by seats so as to assist in sitting down and getting up. Many more suggestions were given and are included later within the design criteria of the system and vehicle.

FOOTNOTES

1. Abt Associates, Transportation Needs of the Handicapped, 1969, p. 41.
2. Bureau of Census, Not Disabled and Disabled or Handicapped Labor Force Status, 1970, Item #52.
3. Abt Associates, Op. Cit., p. 44; and Bureau, Op. Cit., Item #52.
4. Abt Associates, Op. Cit., p. 42.
5. Ibid., p. 42.
6. Ibid., p. 50.

CHAPTER V.

SYSTEM AND EQUIPMENT DESIGN/CRITERIA

A. Introduction

In this chapter, discussion will center around the specifications and criteria of design standards for equipment and systems development which will obviate or ameliorate the operational and physical barriers inherent in present system and vehicle design. These barriers now abridge the mobility of the physically limited and the elderly.

Material contained in an abstract entitled Making Buildings and Facilities Accessible to, and Usable by the Physically Handicapped was drawn upon heavily for the section dealing with Building Criteria. The authors of this report also referred to and were guided by Designing for the Disabled written by Selwyn Goldsmith. The material contained in this text is very specific and technical. We strongly recommend that this text be systematically and aggressively perused by the designers and planners during all the phases of ongoing transportation system development.

We were specifically concerned with collecting and analyzing the data which would enable the planners to rationally determine the form of future system design. The integrity of the continuing transportation planning process will be enhanced by this additional data base.

The solution to mobility for the target population is not simple nor is it close-ended; it is complex and ongoing. In particular, in what ways do the incidences of dysfunctions relate to particular design solutions; to determine this, we not only had to categorize the dysfunctions, assess the present barriers, but also make a critical appraisal of current transportation technology.

In the following sections, then, we will discuss Systems Design, Criteria and Analysis of Technology.

B. Systems Design

Fixed-Route

Traditionally, rubber-tired transportation systems have been designed along radial routes reaching out from the central business district. A fixed-route system which moves people from point A to point B along the most efficient route in terms of area coverage, numbers of people served and headway restrictions requires the user to be mobile. While changes in routing have and can be made, the routing is nonetheless fixed by definition. Those persons physically able do not have to live along the pathway of the route to enjoy access to the system. Good systems design in terms of the physically able involves logical origin-destination routing, short headways and grid routing to keep distance to the nearest route to some acceptable minimum.

If the vehicles used on the fixed-route system are equipped with lifts and/or extending front steps, then the vehicle has become more accessible. At least, it has become more accessible to those of the physically limited and the elderly who have the capability to travel to the pathway of the route. Those who cannot make that essential trip have not had their mobility enhanced nor their potential for mobility realized.

To satisfy the needs of the target population, then, we must not confine ourselves to only adapting the traditional fixed-route system as the solution to making the system totally accessible.

Demand-Response

To develop a comprehensive system, the traditional fixed-route system must be supported by a demand-response actuated, or door to door, system. Any demand-response vehicle which is intended to also serve the wide-range of functional disabilities among the target population, must be equipped with a lift device and is made even more accessible with an extending front step. A demand-response system is analogous to a taxi service. The significant difference is in the economy realized by the passenger capacity of the vehicle. Sharing the ride reduces the passenger cost per mile ratio. Passenger capacity ranges from six-passenger vans to thirty-passenger transit coaches. The economy realized is especially significant for the target population who generally are in the lower income brackets.

Future Systems

Future systems design looks to an ever-evolving ultimate which encompasses the needs and desires for transportation services by the total market potential. Provision of services for specialized groups, such as the target population, can be accomplished within available technology. However, the factors determining that level and the quality of service to be obtained are restricted and shaped by both economic and technological factors.

While possible future systems design can take many different forms, one such system of current thought involves the design of a node system. In one configuration of a node system, transportation zones drawn about central hubs of activity, such as a major shopping center or the university, would be served by vehicles, variable routing and scheduling designed to fit the vast variety of elements within that zone universe. A trip within the zone would not necessarily require a transfer to another vehicle. Travel across zone boundaries would be made on express fixed-route vehicles which would travel on fixed routes between node stations. The transfer point would be at the node station within the transportation zone.

C. Systems Design Criteria

For any transportation system to be accessible requires that all elements, operational and physical, be as barrier-free as possible within existing technology and knowledge.

An assessment of existing technology reveals that several different models of lift devices designed primarily for individuals in wheelchairs are being manufactured. One manufacturer also offers an extending front step which would serve those with limitations associated with semi-ambulatory, incoordination or age disabilities. A variety of other improvements can be made which would eliminate the barriers confronted by those who are physically limited or elderly.

For purposes of understanding and identification, the following offers a list of definitions associated with the various physical limitations which characterize the target population.

"Non-ambulatory disabilities: impairments that, regardless of cause or manifestation, for all practical purposes confine individuals to wheelchairs.

Semi-ambulatory disabilities: impairments that cause individuals to walk with difficulty or insecurity. Individuals using braces or crutches, amputees, arthritics, spastics and those with pulmonary or cardiac ills may be semi-ambulatory.

Sight disabilities: total blindness or impairments affecting sight to the extent that the individual functioning in public areas is insecure or exposed to danger.

Disabilities of incoordination: faulty coordination or palsy from brain, spinal or peripheral nerve injury.

Aging: those manifestations of the aging processes that significantly reduce mobility, flexibility, coordination and perceptiveness but are not accounted for in aforementioned categories.

Note: Disabilities are specific and where the individual has been properly evaluated and properly oriented and where architectual barriers have been eliminated, a specific disability does not constitute a handicap. It should be emphasized that more and more of those physically disabled are becoming participants, rather than spectators, in the fullest meaning of the word."[1]

Vehicles

. Bell cords which are placed low enough to be within the reach of children, the elderly and those limited by upper trunk functional disabilities.

. Fare boxes which are designed with a sufficiently wide coin throat to be used easily by those with arthritic impairments, the visually limited and those with disabilities of incoordination.

. Fare boxes of a distinctive and identifying color to distinguish them from other entryway devices are particularly helpful to the mentally retarded.

. Hand holds, railings and upright stanchions with rubberized or plastic grips are particularly helpful for those with arthritic impairments.

. Hand rails which extend beyond the door openings.

. Hand rails within the step-well up to the fare box which is particularly useful to those with visual limitations in finding the fare box.

. Seat belts contribute especially to the safety and security of the elderly, children and those with disabilities associated with incoordination or who are semi-ambulatory.

. The design of the seat belt and its fasteners must take into account the functional disabilities of the users.

. Seat coverings should be of non-slip material.

. Interior and exterior lighting, especially inside and outside the step-well areas, will increase the safety of all users.

. Step risers should not exceed 7' in height at either step-well.

. Florescent stripping on the edges of the steps will be helpful to those with visual limitations.

. Steps should not have square nosing but rounded, or bull nosing which is essential for those with incoordination disabilities or who are semi-ambulatory.

. Signing on the front and the rear of the vehicle which can be easily read from a distance is helpful to the elderly and the visually limited.

. Signing which incorporates distinctive colors or symbols is helpful to the mentally retarded.

. Storage space for bulky items, such as strollers or walkers, and packages, facilitates movement up and down the aisles by all passengers.

. Extending front steps combined with extending grab rails are especially effective for those with arthritic, incoordination or aging impairments.

. Rear exit doors should be automatic and not the "push type" for ease of use by children, those with semi-ambulatory or incoordination disabilities.

Wheelchair Specifications

Standard models of all manufacturers fall within the following limits:

Length	25"
Width, open	25"
Height of seat from floor	19½"
Height of armrest from floor	29"
Height of pusher handles (rear) from floor	36"
Width, collapsed	11"
Fixed turning radius of standard chair, wheel to wheel	18"
Fixed turning radius, front structure to rear structure	31½"
Average turning space (180 x 360 degrees)	60 x 60"[2]
Stationary position space requirement (1200 sq. in.)	2'2" x 3'10"
Door width	2'6"
Range of reach	3'0" to 3'6"[3]

"Note: Actually, a turning space that is longer than it is wide, specifically 63 x 56 inches, is more workable and desirable. In an area with two open ends, such as might be the case in a corridor, a minimum of 54 inches between two walls would permit a 360-degree turn. A minimum width of 60 inches is required for two individuals in wheelchairs to pass each other.

Crutch Specifications

On the average, individuals 5 feet 6 inches tall require an average of 31 inches between crutch tips in the normally accepted gaits. On the average, individuals 6 feet tall require an average of 32½" between crutch tips in normally accepted gaits."[4]

Walker Specifications

Standard models fall within the range of width of wheelchairs.

. Lift devices should incorporate the following features:
  - automatically operable by the driver from his seat.
  - a clear field of vision by the driver for purposes of safety and security of the user while the lift is being mounted and while it is in motion.
  - as brief an elapsed time as operationally feasible while maintaining the security and safety of the user.
  - automatic locking mechanisms or a safety back plate on the platform to secure wheelchairs while in operation.
  - safety railings to give security to all users

whether in wheelchairs or not.

  - lift in motion should move vertically, as an elevator, without lateral motion.
  - eliptical motions are not recommended.

. automatic wheelchair locking devices within the interior of the bus to secure the chair while bus is in motion.

. precise and technical specifications for vehicle design considerations are to be found in Designing for the Disabled.

From the standpoint of systems design, the demand-response vehicle must incorporate accessibility as well as additional features such as a short-turning radius, good road clearance and a seating capacity for sixteen to twenty-five passengers beside the space allotted for those persons in wheelchairs. These additional features are required because these vehicles will be traveling residential streets of varying widths, terrains and construction standards. Of equal consideration is storage space for transit-owned wheelchairs for those who require human assistance and the use of this aid because of the nature of their post-treatment condition, (i.e., cancer patients receiving cobalt therapy).

D. Building Criteria

"Site Development

Grading: The grading of ground so that it attains a level with normal entrance will make a facility accessible.

Walks: Public walks should be at least 48 inches wide and should have a gradient not greater than 5 percent. Such walks shall be of a continuing common surface, not interrupted by steps or abrupt changes in level. Wherever walks cross other walks, driveways or parking lots, they should blend to a common level.*

Note: Walks of near maximum grade and considerable length should have level areas at intervals for purposes of rest and safety. Walks or driveways should have a nonslip surface.

---

*This specification does not require the elimination of curbs, which, particularly if they occur at regular intersections, are a distinct safety feature for all of the handicapped, particularly the blind. The preferred method of meeting the specification is to have the walk incline to the level of the street. However, at principal intersections, it is vitally important that the curb run parallel to the street, up to the point where the walk is inclined, at which point the curb would turn in and gradually meet the level of the walk at its highest point. A less preferred method would be to gradually bring the surface of the driveway or street to the level of the walk. The disadvantage of this method is that a blind person would not know when he has left the protection of a walk and entered hazards of a street or a driveway. Also, it has been suggested by the blind that different textures of the surfacing material acts as a sensory clue demarking sidewalks from driveways or streets. This method is also useful in indicating the separation of bus stops from normal sidewalk pathways or for indicating the separation of stations within the terminal facility.

. Walks and ramps shall have a level platform at the top which is at least 5 feet by 5 feet, if a door swings out onto the platform or toward the walk or the ramp. The platform shall extend at least one foot beyond each side of the doorway.

. Walks and ramps shall have a level platform at least 3 feet deep and 5 feet wide, if the door does not swing onto the platform or toward the ramp. The platform shall extend at least one foot beyond each side of the doorway.

Ramps: A ramp shall not have a slope greater than one foot rise in 12 feet, or 8.33 percent, or 4 degrees 50 minutes. The surface shall be of non-slip material. A ramp shall have handrails on at least one side, and preferably two sides, that are 32 inches in height, measured from the surface of the ramp, that are smooth, of non-slip material and that extend one foot beyond the top and bottom of the ramp [and which in themselves do not present a hazard to the users]

Note: Where codes specify handrails to be of heights other than 32 inches, it is recommended that two sets of handrails be installed to serve all people. Where major traffic is predominately children, particularly physically disabled children, extra care should be exercised in the placement of handrails, in accordance with the nature of the facility and the age group or groups being served.

. Ramps shall have level platforms at 30-foot intervals for purposes of rest and safety and shall have level platforms wherever they turn.

Note: It is preferable that all or most entrances (exits) should be accessible to, and usable by, individuals in wheelchairs and individuals with other forms of physical disability. At least one entrance usable by individuals in wheelchairs shall be on a level that would make the elevators accessible.

Doors and Doorways: Doors shall have a clear opening of no less than 32 inches when open and shall be operable by a single effort.

Note: It is recommended that all doors have kick plates extending from the bottom of the door to at least 16 inches from the floor.

Note Two: Care should be taken in the selection, placement and setting of door closers so that they do not prevent the use of doors by the physically disabled. Time-delay door closers are recommended.

Note Three: Automatic doors that otherwise conform are very satisfactory.

Note Four: It is essential to have unobstructed space on either side and the positioning of the door is highly critical.

Stairs: Steps in stairs that might require use by those with disabilities defined as semi-ambulatory or of incoordination or by the aged shall not have abrupt (square) nosing.

Note: Individuals with restrictions in the knee, ankle, or hip, with artificial legs, long leg braces, or comparable conditions cannot, without great difficulty and hazard, use steps with square nosing, but can safely and with minimum difficulty use steps with bull nosing.

. Stairs shall have at least one handrail that extends at least 18 inches beyond the top step and beyond the bottom step. The railing shall have a smooth surface of non-slip material and shall not in and of itself present a hazard to the user.

. Steps should, whenever possible, and in conformation with existing step formulas, have risers that do not exceed 7 inches.

Toilet Rooms: Toilet rooms shall have space to allow traffic of individuals in wheelchairs in accordance with wheelchair specification.

. Toilet rooms shall have at least one toilet stall that --

1. is 3 feet wide.
2. is at least 4 feet 8 inches, preferably 5 feet, deep.
3. has a door (where ~~doors~~ are used) that is 32 inches wide and swings out.
4. has handrails on each side, 33 inches high and parallel to the floor, 1½ inches in outside diameter with 1½ inches clearance between rail and wall, and fastened securely at ends and center.
5. has a water closet with the seat 20 inches from the floor.

Note: The design and mounting of the water closet is of considerable importance. A wall-mounted water closet with a narrow understructure that recedes sharply is most desirable. If a floor-mounted water closet must be used, it should not have a front that is wide and perpendicular to the floor at the front of the seat. The bowl should be shallow at the front of the seat and turn backward more than downward to allow the individual in a wheelchair to get close to the watercloset with the seat of a wheelchair."[5]

."In the toilet compartment, the wheelchair user must have space to maneuver and to transfer from his wheelchair on to the fixture from either a frontal or lateral position, indicating a wide and spacious compartment. The ambulant disabled person on the other hand may require a very narrow compartment with rails on either side."[6]

."Toilet rooms shall have lavatories with narrow aprons, which when mounted at a standard height are usable by individuals in wheelchairs; or shall have lavatories mounted higher, when particular designs demand, so that they are usable by individuals in wheelchairs.

Note: It is important that drain pipes and hotwater pipes under a lavatory be covered or insulated so that wheelchair individuals without sensation will not burn themselves.

. Toilet rooms shall have an appropriate number of towel racks, towel dispensers, and other dispensers and disposal units mounted no higher than 40 inches from the floor.

Water Fountains: An appropriate number of water fountains or other water-dispensing means shall be accessible to, and usable by, the physically disabled.

. Water fountains or coolers shall be hand-operated or hand- and foot-operated.

Note: Conventional floor-mounted water coolers can be serviceable to individuals in wheelchairs if a small fountain is mounted on the side of the cooler 30 inches above the floor.

Note Two: wall-mounted, hand-operated coolers of the latest design, can serve the able-bodied and the physically disabled equally well when the cooler is mounted with the basin 36 inches from the floor.

Note Three: Fully recessed water fountains are not recommended.

Note Four: Water fountains shall not be set into an alcove unless the alcove is wider than a wheelchair.

Public Telephones: An appropriate number of public telephones should be made accessible to, and usable by, the physically disabled.

Note: The conventional public telephone booth is not usable by most physically disabled individuals. There are many ways in which public telephones can be made accessible and usable. It is recommended that architects and builders confer with the telephone company in the planning of the building or facility.

Elevators: Elevators in a multiple-story building are essential to the successful functioning of physically disabled individuals. Elevators shall allow for traffic by wheelchairs in accordance with the specifications contained herein relating to wheelchairs and doors and doorways.

Identification: Appropriate identification of specific facilities within a building used by the public is particularly essential to the blind.

. Raised letters or number shall be used to identify rooms or offices.

. Such identification should be placed on the wall, to the right or left of the door, at a height between 4 feet 6 inches and 5 feet 6 inches, measured from the floor, and preferably at 5 feet. [Where possible, location and placement of such signing should be consistent within the facility.]

. Doors that are not intended for normal or public use and that might prove dangerous if a blind person were to exit or enter by them, should be made quickly identifiable to the touch by knurling of the door handle or knob. For example, such doors might lead to loading platforms, boiler rooms, stages, fire escapes, etc.

Hazards: Every effort shall be exercised to obviate hazards to individuals with physical disabilities.

. Access panels or manholes in floors, walks and walls can be extremely hazardous, particularly when in use, and should be avoided.

. Low-hanging signs, ceiling lights and similar objects or signs and fixtures that protrude into regular corridors or traffic ways shall be avoided. A minimum height of 7 feet, measured from the floor is recommended.

[Crowd flow and control are essential factors in the ease and safety of movement of all users, but especially the physically limited and elderly.]

. Platforms should conform to vehicle floor level so that, in effect, steps at terminals or node stations are eliminated."[7]

E. Shelters and Bus Stops

. Shelters provide protection from the seasonal variations in weather for the ease and comfort of all users.

. Benches should be an integral part of the structure for the ease and comfort of all users.

. The structure should be so designed to provide a clear view for the occupant as well as for the oncoming bus driver.

. Signing on the structure should be of raised letters for the use by the visually limited.

. Shelters should be of sufficient dimensions to provide accommodations for individuals in wheelchairs.

. Signing for bus stops should be of raised letters for use by the visually limited or the sign standard should be so marked or turned to provide identification as the bus stop area.

. Signing should be of sufficient height from the ground so as not to present a hazard.

F. Operational Barriers

. Communication is the vital, essential link between the system and the user.

. Information centers should be conveniently located and accessible to all users.

. Information maps should be easily readable by the partially sighted as well as by all users.

On Table 20 the Equipment Criteria matrix details the specific features which should be incorporated in vehicle design and construction. The list of manufacturers is not inclusive but represents the information we were able to secure from those three manufacturers. The criteria table indicates the extent to which these vehicles meet the design criteria specified in this chapter under the heading System Design Criteria.

Agency Inventory surveys were used to identify the extent of existing transportation services to the target population. The surveys were distributed in October-November of 1973. The results reveal that some of the social service agencies in the metropolitan areas do offer transportation services to their clientele. On Table 21, an inventory of these services is listed. It will be noted that 10 of the

16 agencies have no transportation funds allocated in their budgets. Of those 7 responding to that particular survey question, all but one relies exclusively upon volunteers as drivers, many of whom use their own vehicles.

TABLE 20

EQUIPMENT CRITERIA MATRIX

Twin Coach	Flexible	Blue Bird	Manufacturer
N	N	-	Bell cords within reach
			Farebox
N	N	N	with wide coin throat
N	N	N	distinctive color
			Hand holds, railings, stanchions
Y	N	N	rubber or plastic grips
*	N	N	extending beyond door openings
N	N	N	extending up step-well to fare box
N	N	N	Seat belts
Y	N	N	Seat covers of non-slip material
			Lighting
Y	Y	N	interior - step-well area
N	N	N	exterior - step-well area
			Steps
N	N	N	risers maximum height 7"
N	N	N	risers with bull nosing
*	N	N	extending at front step-well
-	-	-	florescent stripping on nosing
			Doors
Y	Y	-	automatic at rear exit
N	N	-	width at front door - minimum 32"
			Lift Device
Y	Y	**	available as optional equipment
Y	-	-	operable by driver from seat
N	N	N	clear field of vision
N	N	N	locking mechanism on platform
Y	-	Y	safety back plate
N	N	N	safety railings
N	N	Y	vertical movement
N	N	***	Automatic interior locking mechanism
Y	Y	Y	Aisle width (flexible seating placement)
N	N	N	Interior storage for various aids, etc.

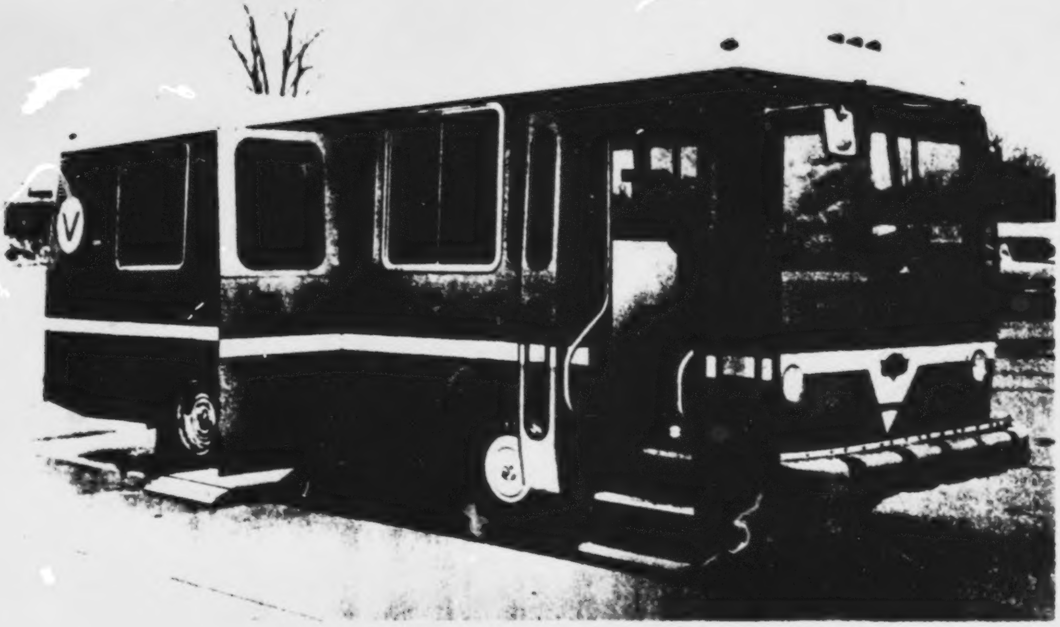
Y - yes
N - no
- information not available
* available with optional extending front step
** children's wheelchairs only
*** optional stanchion and guard rail wheelchair retainer

TABLE 21

AGENCY TRANSPORTATION SERVICE INVENTORY

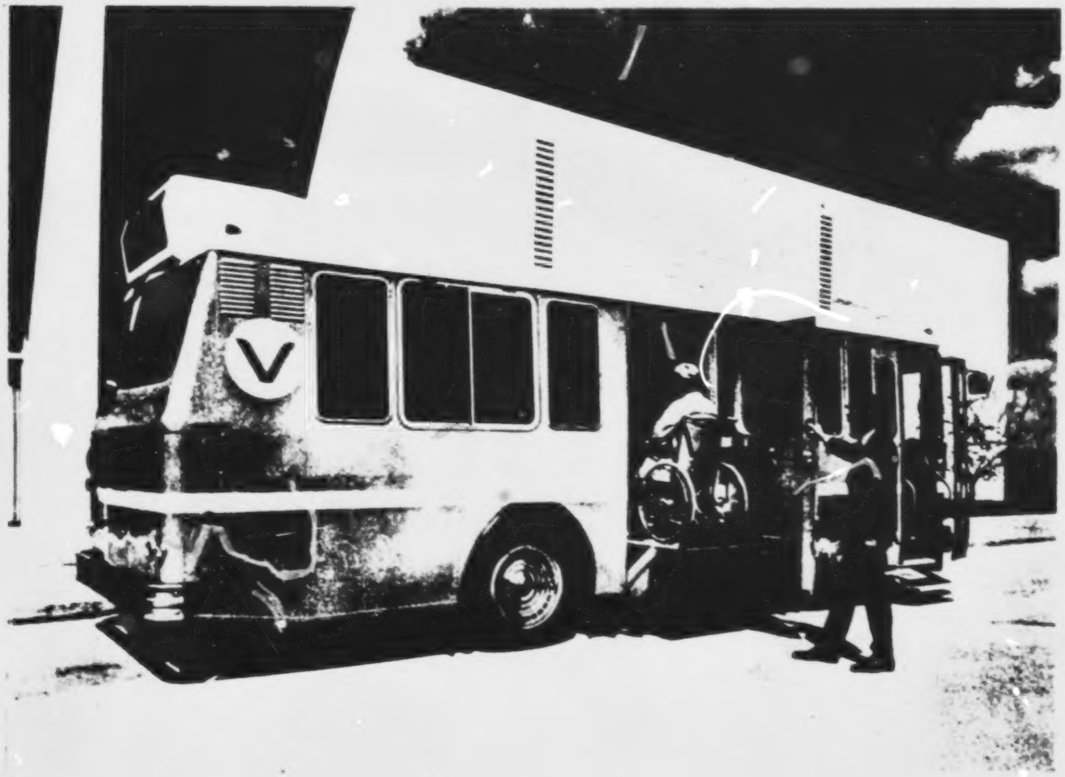
	Apprx. No. of Clients	Transportation Budget	Personnel	Vehicle Inventy
American Cancer Society	1-25	$ 0	Volunteers	--
Campbell Senior Center	300+	$ 350	Volunteers	4 Psngr van
Children's Hospital School	26-75	$33,000	==	6 vans/1
Eugene Hearing & Speech Center	300+	0	--	automobile
FISH	26-75	0	Volunteers	--
Goodwill Industries	75-100	0	--	--
Home Health Service Agency	300+	0	--	--
Meals on Wheels	75-100	5,000	Volunteers	--
Muscular Dystrophy	1-25	0	--	--
Pearl Buck Center	150-300	0	--	--
Public Welfare	900	0	Volunteers	car pool
Salvation Army	300+	5,432	Vol./Staff	1 van
Senior Opportunities/Services	300+	3,000	Volunteers	--
Trude Kaufman Senior Center	2,000	0	--	--
Willamalane Park & Rec. Dist.	100	0	--	15-psgr van
Vocational Rehabilitation	100-175	4,000	--	--

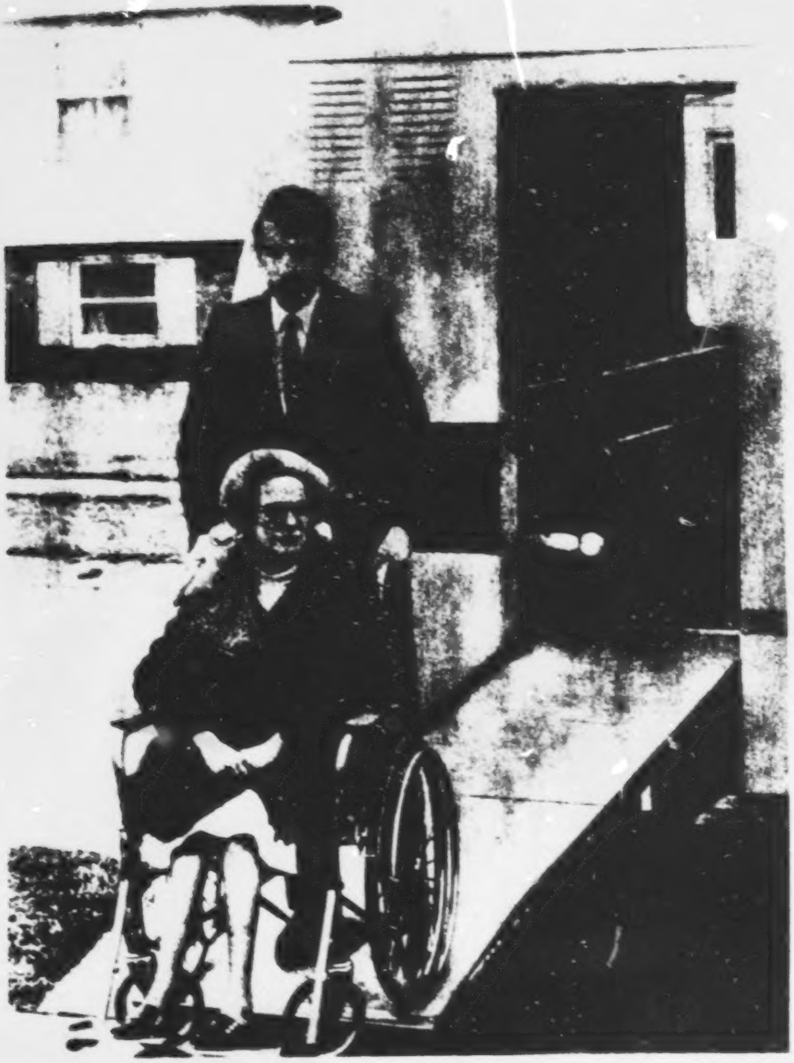
G. Visual Analysis of Equipment



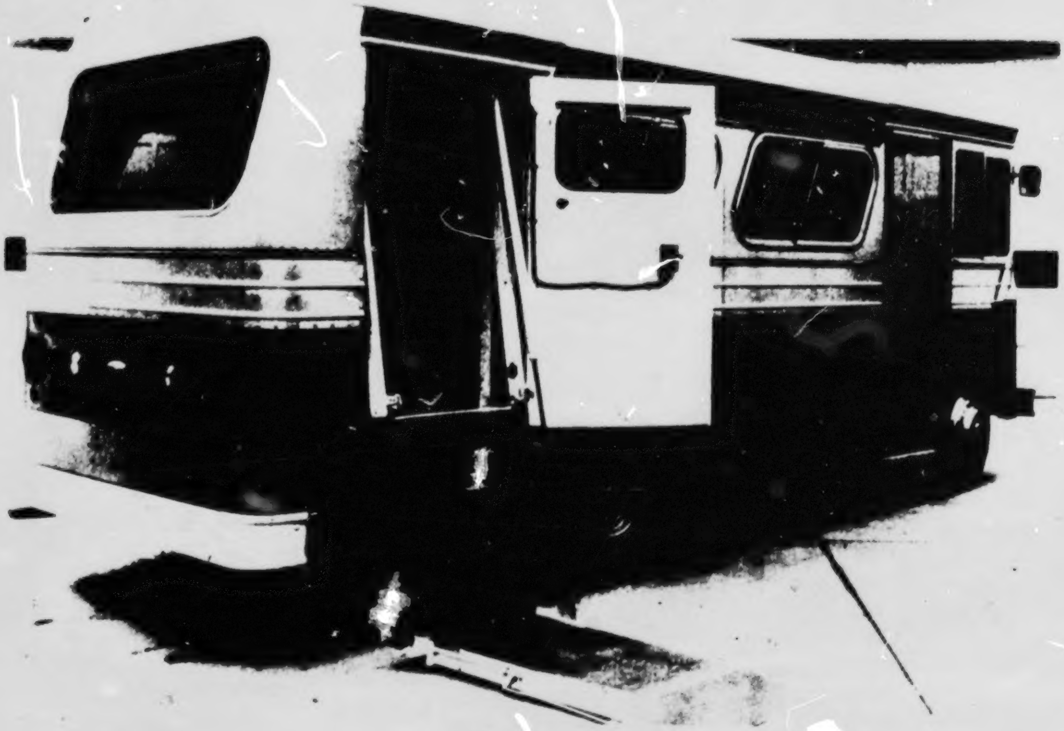
The bus shown above is a Twin Coach, manufactured by Highway Products of Kent, Ohio. This vehicle features an extending front step with extending grab rails and a lift device. The extending front step is an especially effective aid for the elderly and those persons with incoordination disabilities. Of the total target population, approximately 30% can use stairs but experience difficulty doing so. Such a feature combined with adequate railings would begin to alleviate this barrier for those above. Further, because many of the suburban roadways in the Eugene/Springfield area do not have curbings, the extended step will be an effective aid for all patrons.

The picture below is of a Twin Coach vehicle depicting the operation of the lift device they offer. In this instance, the lift is shown being manually operated; however, this lift is available with operation controlled by the driver in his seat. This lift does incorporate a safety back flip plate, but it does not have safety railings, an omission which needs correcting to meet the criteria in Chapter 5. This lift device could be used for a demand-response system with the driver (or aid) operating one lift. In the case where the lift is controlled from the front console, it is mandatory that the driver have a clear field of vision. However, this vehicle design would not be adequate for fixed routing because the driver must remain in his seat and must have a clear field of vision for lift operation, one or the other not being satisfactory with this vehicle.



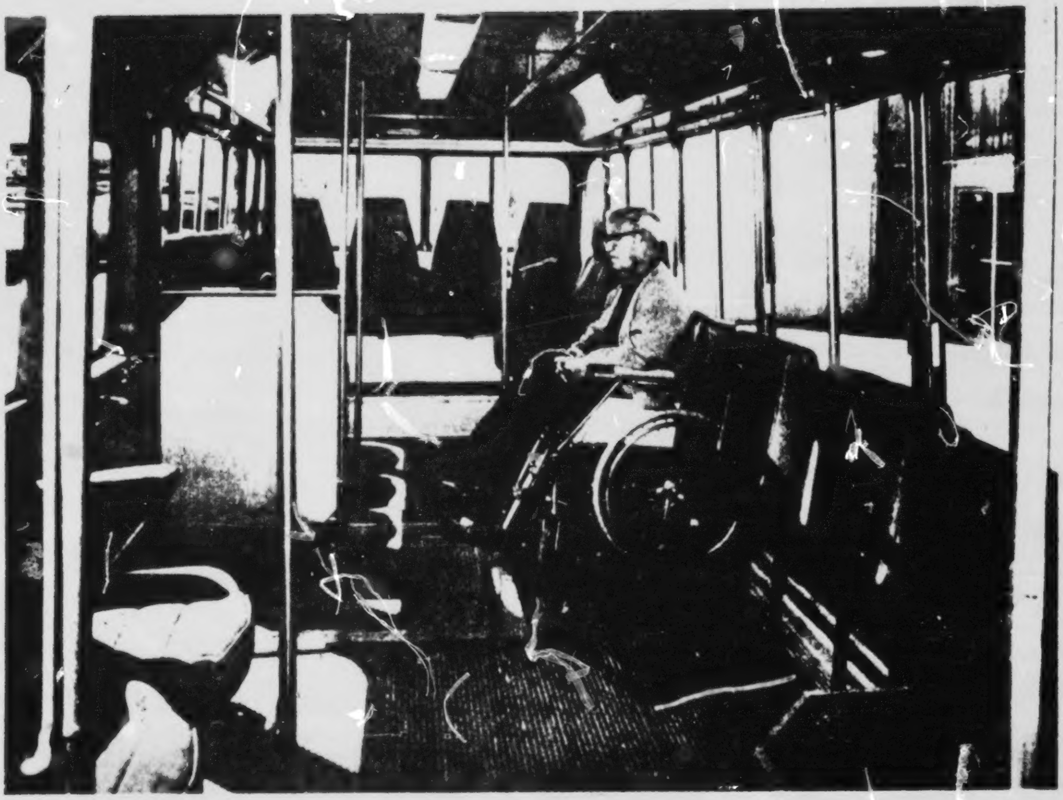


Some manufacturers offer a ramp device as shown above, but 28% of the total sample population indicated they could not navigate inclines by themselves. This device would require assistance which is operationally feasible for demand-response vehicles but is not operationally feasible for fixed-route vehicles. Further, there are no safety railings with this device.



This vehicle is manufactured by the Flexible Company. The lift shown does move almost vertically and it does have a safety back flip plate. It is operable by the driver from outside the vehicle. The lift is not infeasible from a demand-response standpoint but is totally impractical for fixed-route vehicles.It does not have safety railings, nor can it be operated from the driver seat with a clear field of vision.

The lift shown in operation below is manufactured by the Blue Bird Company. This lift is built to serve child-sized wheelchairs only. However, this lift does incorporate a completely vertical movement and the vehicle does have effective interior locking device for the wheelchairs. It does not have safety railings.



The vehicle shown here is a Twin Coach with one of the many possible seating arrangements shown. The aisle facing seats in this instance are jump seats which can be lowered when needed by someone not in a wheelchair. The seats are lacking an efficient and effective locking device for the wheelchair. Seating capacity would be adequate for demand-response vehicles but a different seating arrangement providing for more passenger carrying capacity would be required for fixed-route vehicles.

FOOTNOTES

1. American Standard Associates, Inc., "American Standard Specifications for Making Buildings and Facilities Accessible to, and Usable by the Physically Handicapped," p. 6.

2. *Ibid.*, p. 7.

3. Goldsmith, Selwyn, *Designing for the Disabled*, p. 19.

4. American Standard Associates, Inc., *Op. Cit.*, p. 7.

5. *Ibid.*, pp. 7-10.

6. Goldsmith, *Op. Cit.*, p. 19.

7. American Standard Associates, Inc., *Op. Cit.*, pp. 10-11.

CHAPTER VI

FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

A. Findings

The sample population is representative of the target population. (see Appendix D)

A substantial number of physically limited and elderly need specialized transportation services. (See Appendix D)

A number of social service agencies now provide transportation services to the physically limited and the elderly.

Operational and physical barriers now exist within the public transportation system which limit the mobility of some members of the target population.

Many barriers can be eliminated or alleviated through available technology.

Lift devices, as presently designed, do not meet the criteria established by the study to insure the safety and security of the user.

Lane Transit District has increased the mobility of some members of the target population through its implementation of higher levels of service to the general population.

The planning, design and implementation of transportation service specifically for the target population has not been an integral element of Lane Transit District's transportation development program.

The form of the public transportation system that includes service for the physically limited and elderly need not be restricted to conventional systems but may be innovative and creative.

The variety and the incidence of dysfunctions, and the functional disabilities associated with these dysfunctions, dictate a variety of design solutions.

The installation of lifts on all of the Lane Transit District's fixed-route vehicles would not make the system accessible, but would make these vehicles accessible for a small percentage of the target population.

The potential ridership of the target population can only be realized with the continuing communication and cooperation between the social service agencies, the target population and the Lane Transit District.

Installation of lifts of currently available design on fixed-route vehicles would decrease the level of service provided to the general population by these vehicles. (see Appendix D)

B. Conclusions

The discussion in this report has been directed toward developing a sympathetic understanding of the mobility problems of the physically limited and elderly. Adequate mobility for this population can only come about through a total effort of the public, the Transit District, and the individuals with physical limitations themselves.

In the attempt to make the present transit system "totally accessible," a comprehensive approach, one which realizes the needs of all individuals, was followed. Certain physical dysfunctions dictate certain solutions, yet no one solution will solve the mobility problems of all.

From data drawn from the Transportation Alternatives sample, we know that approximately 30 percent of the physically limited and about 60 percent of the elderly with physical limitations could not use the present fixed-route system even if it were adapted to accommodate the varied physical limitations. Clearly, approximately 2,600 physically limited and about 1,800 elderly in the Eugene/Springfield area have the need for a door-to-door transportation system. Sample data also indicates that this door-to-door system would require an assistant for each bus (this could be the driver), with transit-owned wheelchairs to transport those too weak or those who tire too easily to walk any distance.

Sample data indicates that approximately 60 percent, or 5,000, of the physically limited and about 30 percent, or 800, of the elderly with physical limitations could use the present fixed-route system provided it were adapted to fit all of the varied needs. Whether the system is fixed-route or door-to-door, 30 percent (2,600) of the physically limited and 50 percent (1,500) of the elderly would require a lift on each bus.

The degree of isolation of the target population is very difficult to assess. This variable will have a definite effect on the actual number of persons who use a totally accessible system (s). Such a system would have to develop gradually as more and more people discover for themselves the value of a city and community for all.

Important to the development of society is the integration of its people, their ideas and ways. No transit system, regardless of its design should be made exclusively for the physically limited and/or elderly. Family, friends, and acquaintances should be expected and encouraged to use the system as well. Future transportation planning should be directed toward designing systems which incorporate services for the physically limited and elderly from the onset. A node-to-node transit system is such a system. It incorporates the flexibility of a demand-response (door-to-door) and the speed and efficiency of fixed-route vehicles.

As transit systems begin to respond to the needs of the physically limited and elderly, the problems will be more completely defined and more effective solutions will be discovered. If such a response does not begin to materialize, those with limited mobility will lose, those within the communities will lose, those within the city will lose, and those within the society will lose.

C. Recommendations

1. That the Lane Transit District staff prepare an initial report setting forth vehicle requirements to meet at least three different levels of service using response time as one criterion. The "totally accessible" vehicles must have all the features listed in Chapter 5. Specifically, the buses would be ordered for a door-to-door (demand-response) system. Further acquisition of these vehicles should parallel the need and the growth in service for the target population. (see Appendix D)
2. That all new fixed-route buses be made toally accessible as outlined in Chapter 5. However, the currently available lifts do not yet meet the design criteria as in Chapter 5. Therefore, all buses should be specified with openings sufficient to accommodate the future installation of adequately designed lifts.

3. That an active marketing program be undertaken with adequate funding to inform and to realize the potential of service as indicated in Recommendation #1. To effectively match the needs with the extension of service will require cooperation and communication among the social service agencies, the Lane Transit District and the target population.
4. That the Lane Transit District undertake a research and design project in which to develop, with local resources, a lift device which meets the criteria outlined in Chapter 5.
5. That the Lane Transit District seek federal funding for a demonstration project to design and implement a demand-response subsystem which meets the goals and objectives and coordinates with the long-range planning activities of the District.
6. That once the locally designed lifts meet the design standards in Chapter 5, that adequate numbers of demand-response and/or fixed route vehicles be adapted with this lift in accordance with the response from the target population and in concert with the Lane Transit District's ongoing transportation development program.
7. That an effort be made to build adequate bus shelters and to establish designated bus stops with priority given to areas with concentrations of the elderly.
8. That all new system facilities meet the design standards outlined in Chapter 5.

9. That the Lane Transit District consult with mobility training specialists so that aspects of the specific mobility problems associated with the physically limited and elderly are included in drivers' training programs.
10. That the physically limited and the elderly be encouraged to act as consultants as well as active participants in the analysis and further development of vehicle and system design.

APPENDIX A

LANE TRANSIT DISTRICT

October 3, 1973

Dennis Moore
Mass Transportation Division
312 Highway Building
Salem, Oregon 97310

Re: 13 July 1973 memo from Jack Thornton,
Vocational Rehabilitation

Dear Mr. Moore:

We are undertaking a study to determine the transportation needs and desires of the physically limited and the elderly for Eugene-Springfield metropolitan area. We have enclosed a copy of the Program Description which outlines this study.

We are planning to be in Salem on 11 October and would appreciate an opportunity to discuss details of the study with you.

Your help with the following would be valuable to our efforts:

1. Local agency entry.
2. Literature, research data, and other pertinent materials relating to study.
3. Possible funding sources and their requirements.

We are looking forward to talking with you on the 11th of October.

Sincerely yours,

Mike Butts

Phyllis

Mike Butts
Phyllis Loobey

PL/ms
Enclosure

P. O. Box 1135, Eugene, Oregon 97401 • Telephone: 503/687-0613

List of Resource People for the Study:

Dennis Moore
Mass Transit Division
Department of Transportation
Salem, Oregon

Ric Crowley, Supervisor
Mental Health Division
Salem, Oregon

Jack Thornton
Vocational Rehabilitation Division
Salem, Oregon

Marion Hughes
State Program on Aging
Salem, Oregon

Advisor:

Professor Ting Li Cho
Department of Planning
School of Architecture and Allied Arts
University of Oregon
Eugene, Oregon

Supervisors:

Jim Marshall, Director
PED Program
School of Community Service & Public Affairs
University of Oregon
Eugene, Oregon

Fred Dyer, General Manager
Lane Transit District
P.O. Box 1135
Eugene, Oregon

Agency Workshop List:

Action Associates
Mary C. Noble, R.P.T.

Alcohol-Traffic Safety Clinic
Neil McNaughton

American Cancer Society
Jo Powell

*American National Red Cross, Lane County Chapter
Mary Ellen West

Associated Consultants
Mason Davis

Boy Scouts of America, Oregon Council
Curtis Thornton

Buckley House, Inc.
Geroge Buckley

Campfire Girls, Wilani Council
Jean Bingl

*Celeste Campbell Senior Center
Cuma Smith

Child Care, Inc., Eugene Center
Kay Johnson

Child Guidance, Inc.
Thomas M. Allen

Children's Community School
Flight Fowler

Children's Hospital School
Byron D. Krog

Christian Family Institute
Dr. Lawrence M. Bixler

Council of the Poor
Glenellen Morgan

County Extension Agent
Steve Besse

Deaf Information
    Allen Kraal

Elks Lodge Dental Clinic
    John T. Foreman

Emerald Community Center
    Sara Peterson

Emerald Council for the Blind
    Wilbur Harrison

Emerald Empire Council of Aging
    William Zinke

Emerald Valley Club of the Deaf
    Henry Nelson

*Eugene Hearing and Speech Center
    Wes Seaman

Eugene Parks and Recreation Department
    Pam Earle

Eugene-Springfield Ambulance Service
    Bill Leonard

*Federation of the Blind
    Claire Newport

*FISH
    Larry Cash

Girl Scouts of America, Western River Council
    Mrs. Walter McKenzie

*Goodwill Industries of Lane County
    Bob Miller

Harmony House
    Robbie Cranch

H. E. L. P.
    Ruth M. Snyder

Head Start
    Gary Klyen

*Home Health Service Agency
    Juanita Mallory

L. A. R. C.
    John Glassburner

Central Lane Committee Mental Health Association
    of Oregon
    Camilla Bayless

Children's Services Division, Region IV
    Tom Moan

Lane County Community Coordinated Child Care Council
    Ruth Edwards

Lane County Council on Alcoholism
    Alice Plymell

Lane County Council on Alcoholism
    Harold Thorin

Lane County Council on Alcoholism, Inc.
    Kathy Reid

Lane County Mental Health Clinic
    Thomas F. Nugent

*Public Welfare Division
    Doug Hunter

Lions Club
    Don E. Jones

*Muscular Dystrophy Association
    John G. Cox

National Alliance of Businessmen
    Don Low

*Oregon Architectural Barriers Council
    Larry Craig

*Oregon Commission for the Blind
    Lynn Harrison

*Oregon Division of Vocational Rehabilitation
    Dave Kleger

*Park Manor Health Care
    Jack Steen

*Pearl Buck Center, Inc.
Mick Waggoner

River Road Park and Recreation District
James Lockard

The Salvation Army
Major Frederick Gibson

*S. O. S.
Ruth Rath

Serenity Lane, Inc.
Thomas A. Kerns, M.D.

Social Security Administration
Dean O. Haley

Society of St. Vincent De Paul
H. C. McDonald

Springfield Public Schools
Allene Bechtle

*Trude Kaufman Senior Center
Caroline Spores

University of Oregon Center on Human Development

*Valley West Retirement Center, Inc.
Charles M. Borris

*Veterans Administration
Ken Davis

Veterans Affairs
Martin L. Lien

Willamalane Park and Recreation District
Fern Mandel

*Agencies, directly interacting with the target population who participated in the Client Inventory Surveys.

APPENDIX B

Transit body eyes help to handicapped

By JERRY UHRHAMMER
Of the Register-Guard

A special hearing on problems of providing city bus service to handicapped persons will be scheduled later this summer by the Lane Transit District (LTD) board.

That promise was made by Board Chairman Craig Robinson Wednesday evening after an exchange with a member of the Oregon Architectural Barriers Council about whether certain "assumptions" had already been made on the type of service to be provided the handicapped.

"We do need better input on these problems," Robinson said, suggesting that a special meeting be held in July or August.

THE CENTRAL issue is whether the LTD should purchase a "special" bus for the disabled or adapt the existing bus system to meet the needs of disabled persons as well as the general public.

The exchange came after Robinson criticized as "quite inaccurate" a letter to the board from Eugene Mayor Lester Anderson and Dennis Celorie, chairman of the Mayor's Advisory Committee for [illegible] with Mobility Prob[illegible]

The letter said, among other things, that:

- ". . . It has become consistently apparent to the disabeld citizens in our area that the LTD is not planning to make the public transportation system accessible to individuals with severe mobility problems."

Robinson challenged the letter, saying the "purported statements of fact" were not factual. No such judgments have been made by the LTD board, Robinson said.

"THERE HAS been no expression of board policy that I'm aware of," Robinson continued.

- "IT IS clear, though, that LTD intends to purchase a "special" bus for the disabled which is separate and distinct from the public transportation system." The letter said the LTD, to substantiate the purchase of such a bus, conducted a telephone survey in hopes of finding the number and location of disabled citizens in Eugene and Springfield who need a "special" bus.

- "Assumptions were made by the LTD board in conducting the telephone survey that the disabled need a "special" bus just for themselves and that "if the handicapped don't phone in, they are lazy and don't need access to public transportation anyway."

But Larry Craig of Springfield, a member of the Eugene-Springfield chapter of the architectural barriers council who said he had helped in compiling the mayor's letter, replied that such assumptions had indeed been made in past board discussions.

Later, Craig said he is happy that a special meeting will be held on the problem.

The letter from Mayor Anderson and Celorie concluded that a "special" bus system for the disabled is neither needed nor desirable, and that adaptation of existing buses to meet those needs is more realistic and desirable.

In another action, the board approved a trimmed-down application for a federal grant to buy new buses and other equipment.

DELETED FROM the original proposal was an item for ten 42-passenger buses costing an estimated $460,000, and substitution of a special frame and front end alignment rack with a four-way wheel alignment rack that is $15,574 cheaper.

Thus, the reduction of $475,574 left a total preliminary grant application for $1,228,839 — one third of it to be provided locally and the other two-thirds from the federal government under the Urban Mass Transportation Act.

But Thursday morning, it was reported that a clerical error had been made in compiling the figures and the new total is $1,285,597.

LTD general manager Fred Dyer said he plans to contact the board members individually to determine whether they want to act on the grant application again at a meeting next week.

Register Guard
June 14, 1973
Eugene, Oregon

Transit board under fire

Bus lifts sought by handicapped

By PATRICIA SMITH
Of the Register-Guard

The Lane Transit District bus system should be accessible to everyone, including the physically handicapped, a group of about 40 persons told members of the LTD Board Tuesday night.

The transit district should not form a separate "minibus" system exclusively to serve the physically disabled, spokesmen for the 40 said. Instead, 20 new buses ordered through a federal grant application should be equipped with hydraulic lifts, making the regular system accessible to the handicapped, they said.

Board Chairman Craig Robinson told the onlookers, several of them in wheelchairs, that past transit district studies on transportation needs of the handicapped haven't been successful in determining the number and location of such people in the Eugene - Springfield area.

THE PROBLEM of mass transit for the disabled does exist, Robinson added, and the transit board hasn't ignored it. "But we've frankly admitted we don't know how to solve it," he said.

Billed as an informal type of public session designed to gain information on the transportation needs of Eugene-area handicapped people, the meeting produced some sharp criticism of the transit board.

Robinson said in opening the meeting that transit board members hadn't made any policy decision on the transportation for the disabled issue.

But Larry Craig, a University of Oregon student who is chairman of the Eugene-Springfield Architectural Barriers Commission, disagreed.

He charged that a policy decision was indeed made when the transit board decided to apply for $1.[illegible] million in federal funds for the purchase of the new buses and a bus garage in west Eugene.

"These 20 new buses aren't accessible," he said, referring to the fact that they aren't now planned to be equipped with hydraulic lifts.

HE FURTHER CHARGED the transit board with favoring the creation of a separate minibus system just for the handicapped — a policy he labeled "expensive and segregationist."

Peter Marcus, a U of O architecture student who is also a member of the architectural barriers group, said, "If I can't get on a bus with my peers, then I'm no longer a peer."

"The first priorify of a mass transit system should be to find its clientele among those who have no transportation at all — not even a car," he said.

State Rep. Nancie Fadeley of Eugene urged the board not to isolate the handicapped and elderly through its transportation policies.

She said she has asked State Atty. Gen. Lee Johnson for his interpretation of new federal legislation which apparently requires buses being purchased with federal funds to be made accessible to the disabled.

"The transit district instead has approached mass transit backwards, by providing buses as an alternative source of transportation for people who already drive cars," he added.

The Lane Transit District's new buses and garage would be 80 per cent financed with the federal grant, Robinson said. An official opinion on the federal law hasn't been received from Johnson's office, however, Mrs. Fadeley said.

Dennis Celorie, chairman of the Mayor's Advisory Committee for Persons with Mobility Problems, said, "I'm not looking for a special bus." A critic of the transit board in the past, Celorie, like most others at the meeting, urged board members to amend the grant application and specify hydraulic lifts on the 20 new buses.

If the grant is approved, the new buses would be delivered in about 10 months, transit district General Manager Fred Dyer said.

Board members took no official action on the request to amend the application Tuesday night. But Robinson named Phyllis Loobey and Gary Buell to a subcommittee to assimilate Tuesday night's comments and report to the board at its next meeting.

Robinson also set a formal public hearing on the grant application for Oct. 23.

Register-Guard
September 19, 1973
Eugene, Oregon

For disabled persons

Two studying transit needs

Individuals with physical limitations can find getting on and off a bus difficult or even impossible and thus may have to depend on social service agencies or friends for transportation.

A growing awareness in the Eugene-Springfield area of the inaccessibility of buses to the disabled has prompted a study by two University of Oregon students, Phyllis Loobey and Michael Butts, in conjunction with the Lane Transit District (LTD).

Miss Loobey is a field intern this year in the U of O School of Community Service and Public Affairs. Butts is a graduate student in urban planning.

Each will receive academic credit for working on the study fall and winter terms — Miss Loobey 12 credit hours each term and Butts six credit hours each term.

FRED DYER, LTD manager, said "this particular subject is something that has long been a priority with the (mass transit) board. But we've never been able to get a real handle on what the situation is."

Dyer said attempts to learn how other transit systems in other cities handle the problem has shown generally that "they're not doing anything. Every place we've gone, we've found we're the only ones thinking about doing something about it."

Miss Loobey called the project "the first definitive study by a mass transit district." While federal census data shows there are some 8,000 persons in the Eugene-Springfield area who are disabled, she said, the type and number of disabilities is not known.

She said it is also not known how many people are disabled who are under the age of 16 or over the age of 64.

SHE SAID she and Butts will survey some 1,500 of the area's 8,000 disabled persons in order to gather information on what type of equipment is needed to make the transit system accessible to the disabled.

Wheelchair lifts, proposed by some, will meet the needs of some persons, she said, but the local transit district needs to know how many people needs lifts as opposed, say, to "door-to-door service."

"A lift will not make the system accessible to those persons with visual impairments, those who suffer from shortness of breath or cancer patients who suffer from cobalt treatment side effects," said Butts.

A comprehensive approach, one which realizes that different physical problems dictate different solutions, is the only one which will make the present bus system totally accessible, according to Butts and Miss Loobey.

THEY ARE looking specifically for actual and desired travel patterns, the incidence of physical limitations and the extent of physical and physchological isolation experienced by the disabled.

The pair conducted a workshop earlier this fall with the social service agencies which deal with the physically limited. "We wanted to introduce our study and get the agencies to think beyond the bounds of their individual client groups," said Butts. They plan additional workshops, to focus on problems of the blind and elderly.

The LTD is ordering 20 new buses in late spring. The six-month UO study will be completed in time to update specifications for those buses to make them accessible to the disabled, according to Miss Loobey, a member of the LDT Board.

IN FACT, such a study is required by the Urban Mass Transit Administration, which is partially funding the new buses, before specifications can be changed to increased accessibility for the disabled.

"This study will not only meet UMTA funding requirements, but will also establish a model for similar studies to be conducted in other cities, as well as add to citizen awareness of the problems of the physically limited," said Butts.

"We share the realization that the barriers which render the real handicaps to mobility need only be temporary, provided that the thoughts, feelings and energies are present to effect the changes necessary to overcome these barriers," he said.

Register-Guard
December 17, 1973
Eugene, Oregon

Transportation needs studied for physically limited area residents

By ROSS DANIELS
Of the Emerald

Two University students, in cooperation with the Lane Transit District (LTD), are conducting a study of the Eugene-Springfield area's physically limited residents to determine how buses should be modified to make the present bus system totally accessible."

Phyllis Loobey, a field intern at the University's School of Community Service and Public Affairs and secretary for the LTD Board of Directors, and Michael Butts, a graduate student in urban planning, have been working on the study since the beginning of fall term. They will receive academic credit for their work — Loobey 12 credit hours each term and Butts six credit hours each term.

Much of the work they have been doing centers on finding out what kind of physical limitations are involved and where the people are located.

The two students have discovered that about 8,000 disabled persons between the ages of 16 and 64 live in the Eugene-Springfield area. Figures are not yet available for the number of persons with mobility limitations under 16 and over 64.

To find out more about these persons, the pair consulted over 65 agencies which deal with the physically handicapped, such as the Welfare Department, the Red Cross and the American Cancer Society.

In addition to getting this data they "needed to find out what the different agencies needed," Loobey said. "Some take their services to the individual and some have individuals come to them." Butts added that "by coordinating the transportation needs of the agencies, we can save them manpower and money."

During the fall, the students conducted workshops with some of the social service agencies dealing with physically limited persons. "We wanted to introduce our study and get the agencies to think beyond the bounds of their individual client groups," Butts explained. They plan to hold training sessions soon, focusing on the blind and the elderly.

They have also sent out over 1500 surveys to physically limited persons. "If they come back, they'll give us clues to the individual's self concept," said Butts.

He explained the importance of this for developing plans concerning bus modifications. "We can determine who is psychologically isolated and get these people into the community," he said. "The community will also get to know them. We're going beyond the data, trying to develop an awareness of what bus riding can mean for the physically limited," Butts added, saying "Take the elderly for example. Most prefer the privacy of travel by small groups in cars with the help of friends.

"We want to get people who are approaching that age accustomed to buses. We want to give people an alternative to the present system," Loobey said.

"We also want to offer the mentally retarded a chance for more exposure," said Butts. "Some of the mentally retarded are so sheltered by their parents that they build up a dependence. By looking at a variety of factors we can provide potential for breaking their chains."

After discovering the actual and desired travel patterns, the incidence and extent of physical limitations, projected crowd flows at bus stops, such as the new terminal-retail shopping building soon to be built in downtown Eugene, and additional information, the pair will submit a report to the LTD Board of Directors.

The Board will then use this report as a guide to determine what modifications to request on new buses. "The board will consider the target population and also the needs of the general population," Loobey said.

The idea of installing wheelchair lifts on all buses has been proposed locally as the way to make the bus system totally accessible to the disabled.

Loobey and Butts believe that lifts will help many, but are not adequate to meet the needs of the disabled population as a whole.

"A lift will not make the system accessible to those persons with visual impairments, those who suffer from shortness of breath, or cancer patients who suffer from cobalt treatment side effects," explained Butts.

"A comprehensive approach, one which realizes that different physical problems dictate different solutions, is the only one which will make the present system totally accessible," said the pair.

Loobey indicated that the local reaction to this approach from persons confined to wheelchairs is good, and that they are "waiting for the study to be completed."

The six-month study should be completed in time to be used in making requests for modifications on 20 new buses which LTD expects to purchase late this spring. A study is required by the Urban Mass Transit Administration (UMTA) which will finance 80 per cent of the cost of the new buses, before requests for special modifications to make the buses more accessible can be made.

Both Loobey and Butts expressed hope that LTD would be able to get a special research and development grant to develop some of the needed equipment right in the Eugene-Springfield area. "No system developed so far, lift or otherwise, has been satisfactory," said Loobey. She cited an example of blind persons being unable to distinguish the sound of buses from other gasoline or diesel powered vehicles. "A device which uses audible signals to alert the blind person or the bus driver could be developed," she added.

Loobey pointed out that this is the first study of its kind ever attempted. "This study will not only meet UMTA funding requirements, but will also establish a model for similar studies to be conducted in other cities, as well as to add to the citizen awareness of the problems of the physically limited," said Butts.

Butts also said, "We share the realization that the barriers which render the real handicaps to mobility need only be temporary, provided that the thoughts, feelings, and energies are present to effect the changes necessary to overcome these barriers."

Daily Emerald - January 11, 1974
Eugene, Oregon

Bus service for disabled under study

By CLAY EALS

Correspondent, The Oregonian.

EUGENE — When most people decide to take a bus, they just go to a bus stop and get on board.

But it's not that easy for elderly and disabled people, and the Lane County Transit District is trying to find out the best way of providing bus service to the estimated 8,000 persons with physical and mental disabilities.

"We want to make the buses totally accessible," says Michael Butts, a graduate student in urban planning at the University of Oregon. Butts, 26, and Phyllis Loobey, 36, a field intern in the UO's school of community services and public affairs, are surveying the county's disabled persons for the transit district.

The two are questioning disabled persons to determine what troubles they have in getting to bus stops, signalling bus drivers to stop and getting on board.

Those surveyed include people with visual, hearing or speech impairments, a heart condition, hypertension, shortness of breath, arthritis, fractures, a paralysis or who tire easily.

Butts and Mrs. Loobey hope to have their survey finished by March when they will make recommendations to the transit district board of directors.

Survey a first

Although other cities, including Portland and Boston, have done similar studies, Mrs. Loobey said, "This is the first survey of its kind undertaken by a county transit system in the country."

The objective of the survey is to find out what changes can be made in the design of buses to better accommodate the disabled. The transit district will order 20 more buses in late spring.

The money needed to change the design of the buses will be sought by Butts and Mrs. Loobey from the federal Urban Mass Transit Administration. Because UMTA is partially funding the purchase of the new buses, and because the Lane Transit District led the nation in passenger increase during last year, there is a "very good chance" of getting the funds needed for modification, Mrs. Loobey said.

Modifications eyed

Possible changes in bus design include installation of wheelchair lifts and extended first steps, as well as giving the seats inside the bus a rough surface. Also, redesigning of the front of the buses may be necessary to accommodate various sizes of wheelchairs, Mrs. Loobey said.

Because many elderly people say their main problem in taking the bus is getting to the bus stop, routes may be redesigned and door-to-door service may be provided, Butte said.

Both are optimistic about helping the elderly and disabled get better bus service. "Our study," said Butts, "will establish a model for similar studies to be conducted in other cities, as well as add to citizen awareness of the problems of the physically limited."

The Oregonian
January 20, 1974
Portland, Oregon

APPENDIX C

LANE TRANSIT DISTRICT

Dear

On 18 October 1973, we are conducting a workshop which is the first step in a coordinated agency effort to help plan a "barrier-free" transportation system for the elderly and physically limited persons.

Your input is essential if our study is to be accurate and effective in the implementation of a viable transportation system.

We invite a representative from your agency to our workshop and are looking forward to meeting and working with you.

The workshop is scheduled for 18 October 1973, from 8:00 to 10:00 p.m. at Expo Building #2 at the Lane County Fairgrounds.

Enclosed is a proposal which summarizes our thoughts and planning direction.

Sincerely yours,

Michael Butts

Phyllis Loobey

Michael Butts
Phyllis Loobey

Enclosure

P.O. Box 1135, Eugene, Oregon 97401 Telephone: (503) 687-1223

TRANSPORTATION ALTERNATIVES
FOR THE
ELDERLY AND PHYSICALLY LIMITED
OF LANE COUNTY

Study conducted in coordination with
Lane Transit District
Michael Butts
Phyllis Loobey

TRANSPORTATION ALTERNATIVES

The following proposal is directed toward determining the transportation needs of the physically limited and the elderly of the Eugene-Springfield metropolitan area. At the present time, limited provision is made for broad-based inclusion of equipment and services for the elderly by the Lane Transit District to fulfill some of those needs. Conditions in the environment, however, support the extension of such services. Among these are a desire expressed by the Lane Transit District to investigate the extension of services to the target population and an interest and concern expressed by the local citizens.

To date, most transportation programs do not consider variances in mobility needs during the design phase of their system. As a result, these systems meet the needs of the general population, but exclude the persons with mobility limitations. We recognize that a public transportation system should be accessible to all citizens. Our first objective is to realize the social, psychological and physical needs of the elderly and physically limited through access to employment, educational, recreational, and cultural opportunities.

Presently, a number of agencies in the metropolitan area are involved in the provision of transportation services for their clients. We will be investigating whether time and money is being duplicated in providing fragmented transportation services. Our second objective is to seek a maximization of local resources through a coordination and consolidation of existing transportation services of agencies dealing with the target population.

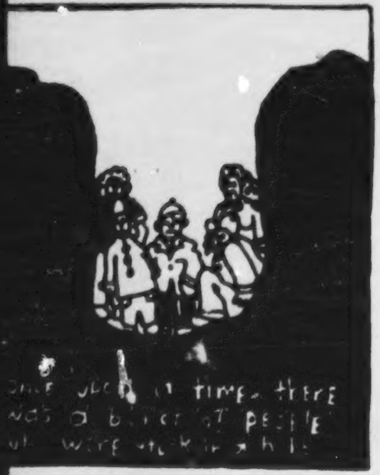
In order to plan and implement a system to meet the needs of the target population in the Eugene-Springfield area, precise information is needed to determine the extent and nature of the needs. Some of the data exists in the 1970 Census of Population and the National Institute of Health statistics about the general characteristics of the target population, but the precise data needed to meet funding requirements as well as to facilitate the planning and design of a barrier-free system is not available. Specifically, this would include geographical location, types of disability, needed or desired mobility patterns, and the requirements of individuals having such disabilities.

We propose to conduct a survey which focuses on locating those people that would benefit by the services (the target population), locating those agencies that interact with the target population in providing transportation and other services at present, and assessing ridership and service provisions of the Lane Transit District. The survey thus focuses on the location and cataloging of present resources in the Eugene-Springfield area and the systematic description of the needs of the target population.

The completed surveys will serve several functions. First, they will gather the information necessary for planning and and implementing a system in conjunction with the Lane Transit District. Secondly, they will provide a basis for coordinating present facilities and services provided by independently functioning agencies serving the same clients. Thirdly, the information gathering model could be disseminated to other cities that are interested in developing a similar system.

Our efforts and hopes will be fulfilled when the barriers that render people handicapped are removed. We share the realization that the barriers which present the real handicaps to mobility need only be temporary, provided that the thoughts, feelings, and energies are present to effect the changes necessary to overcome these barriers.

WELCOME TO OUR TRANSPORTATION WORKSHOP
"TRANSPORTATION ALTERNATIVES
FOR THE ELDERLY & PHYSICALLY LIMITED"


Once upon a time there
was a bunch of people
at were stuck in a hole

INTRODUCTION:

Why are we here tonight?
What is needed from us all?

ROUND I:

Those with green or blue programs go to bus #1 via station "A". Those with pink or white programs go to bus #2 via station "B".

BREAK AND REFRESHMENTS

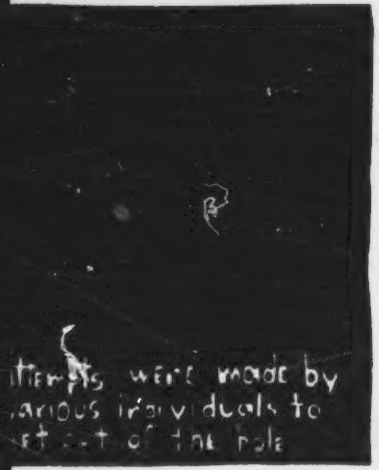
ROUND II:

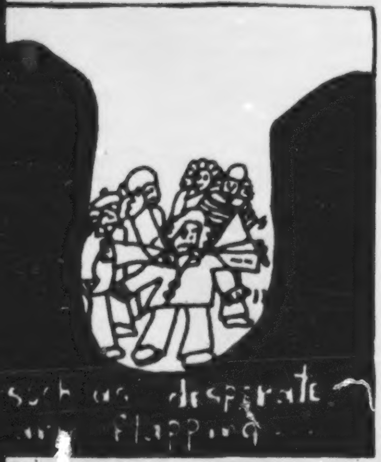
Go to the table displaying your program color.

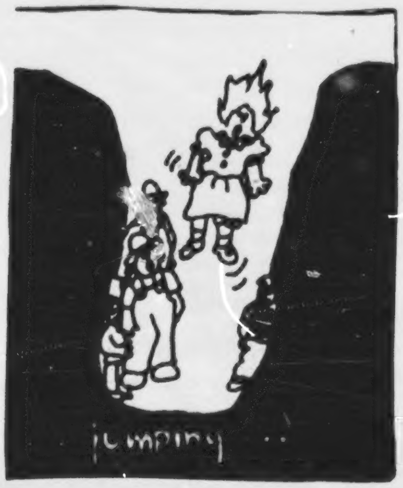
TASK: Given a LTD bus with a stationary driver, design a transportation system for the Eugene area in which the entire population is:

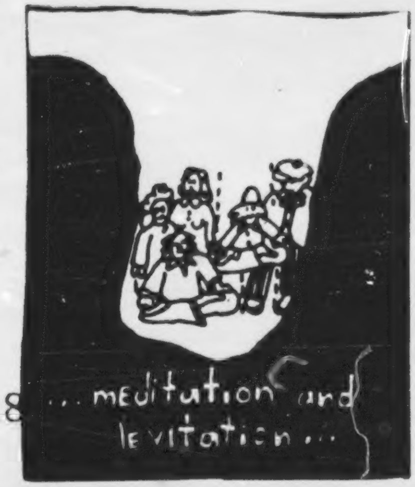
Blind.............green
Elderly...........blue
Wheelchaired......pink
uses a walker, crutches, or cane..........white

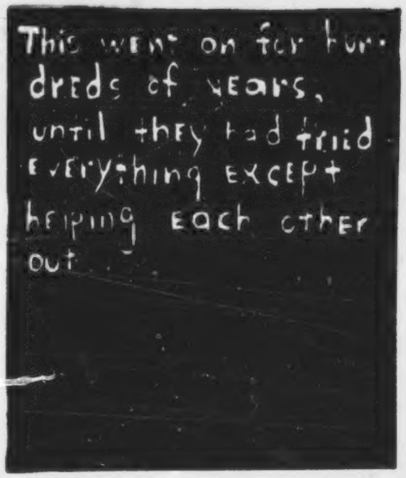
FINAL ASSEMBLY

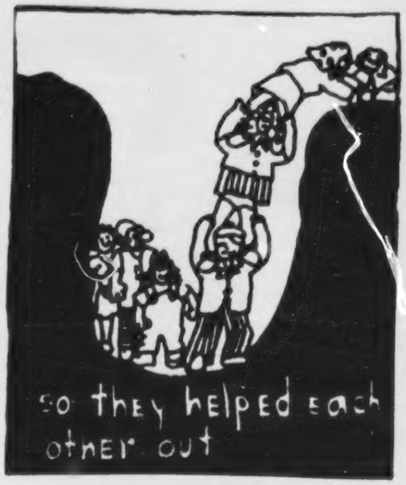

ttempts were made by
arious individuals to
et out of the hole


such as desperate
arm flapping...




...meditation and
levitation...


This went on for hun-
dreds of years,
until they had tried
everything except
helping each other
out


so they helped each
other out

TRANSPORTATION ALTERNATIVES
AGENCY INVENTORY SURVEY

Agency #________

1. Name________________________________ Address________________________________

2. Approximately how many people do you serve that are currently active in your program?
   a. 1-25 _____
   b. 26-75 _____
   c. 75-100 _____
   d. 150-300_____
   e. 300 + _____

3. How would you describe the clientele you are now serving?
   a. 1-15 years of age _____%
   b. 16-64 years of age_____%
   c. 65 years and over _____%

   Of the total number of clients, what percentage are:
   a. _____% confined to the home all or most of the time.

      Normal mode of transportation for this client group.
      1. LTD bus...................._____%
      2. Taxi......................._____%
      3. Special cab................_____%
      4. Client's own vehicle........_____%
      5. Agency's vehicle............_____%

   b. _____% need special aid or human assistance in getting around freely outside.

      Normal mode of transportation for this client group.
      1. LTD bus...................._____%
      2. Taxi......................._____%
      3. Special cab................_____%
      4. Client's own vehicle........_____%
      5. Agency's vehicle............_____%

   c. _____% have trouble getting around freely outside.

      Normal mode of transportation for this client group.
      1. LTD bus...................._____%
      2. Taxi......................._____%
      3. Special cab................_____%
      4. Client's own vehicle........_____%
      5. Agency's vehicle............_____%

d. _____% have no restrictions in getting around freely.

Normal mode of transportation for this client group.
1. LTD bus....................._____%
2. Taxi........................._____%
3. Special cab................._____%
4. Client's own vehicle........_____%
5. Agency's vehicle............_____%

4. Please describe how you are presently meeting your transportation needs.

a. We remunerate our clients' transportation costs such as bus or taxi fares. _____yes _____no. If yes, please describe.______________

____

____

____

b. We have a vehicle available to meet our clients' transportation needs. _____yes _____no. If yes, please indicate the number, type, and title ownership of vehicle being used as well as any special devices (such as a lift) that have been installed.

Number	Type	Title ownership	Special devices

c. Other____

____

____

____

5. Has special funding been secured for the purchase of vehicles or operations of your transportation service? _____yes _____no.
Please describe (i.e., grants, donations, etc.).______________________

____

____

____

6. What percentage and dollar amount of your budget, on an annual basis, is allocated to transportation services?

a. _____%
b. $_____

7. Is this amount sufficient for future transportation needs? _____yes _____no.
If no, what is the estimated funds required to meet your estimated demands?
$_______

8. Please describe your average weekly destination patterns.

Purpose	Location (Address)	# trips per week	Average # of clients making trip per week	Day and time of day trip is made
WORK				
SHOPPING				
SCHOOL				
SOC. REC.				
MEDICAL				
FOOD STAMPS				
Other				
Other				
Other				
Other				
Other				
Other				
Other				

9. Do you feel your organization presently has a problem in meeting the special transportation needs of the people you serve? _____yes _____no. If yes, please describe your transportation problem in detail (i.e., insurance, operations, manpower, etc.) ________________________________

If no, have you formerly had a transportation problem that you feel is presently being served? _____yes _____no. If yes, please describe the problem and the solution in detail. ________________________________

LANE TRANSIT DISTRICT

18 October 1973

Dear Agency Representative:

Enclosed with this letter is an Agency Inventory Survey form. To satisfy one of the objectives of the Transportation Alternatives Study, we need precise, accurate information which details the agencies' provision of transportation services to the physically limited and the elderly. The survey is designed to gather from you the data which the Lane Transit District needs to plan an effective, efficient and barrier-free transportation system for the target population.

Essentially, your input is a vital part of the planning process. To facilitate this planning, we need your assistance with the following:

1. providing the accurate data requested in the survey
2. evaluation of the data collected and processed by us
3. recommendations and conclusions which you may draw from the data
4. evaluation of the effectiveness of the transportation system after its implementation

We sincerely appreciate your help and participation during this phase of the study. Either of us will be happy to discuss with you any questions of concern which you may have regarding the Study or the survey. You may reach us or leave a message at the Lane Transit District office. The number there is 687-0613.

Sincerely,

Mike Butts
Phyllis Loobey

Encl.

P.O. Box 1135, Eugene, Oregon 97401 Telephone: (503) 687-1223

LANE TRANSIT DISTRICT

PROCEDURAL DESCRIPTION
OF CLIENT SURVEY

The completion of these surveys is of vital importance in designing a responsive and comprehensive transportation system for the physically limited and elderly of the Eugene/Springfield area. In order to maintain the confidentiality of your clients' names and home locations, we ask that you fill in the appropriate numbers on each survey as described below. Please read the steps below before handing out the surveys.

Step 1. Indicate the total number of clients served by your agency._______

Step 2. Of the total number of clients, indicate how many are physically limited, either elderly or non elderly._______

Step 3. Of those who are physically limited, make a master list, assigning each a number, beginning with the number one.

Step 4. On each survey, the following caption is entered:
"Survey Number _A_/_B_
Home Location by Transportation Zone _C_"
In each of the three spaces provided - A, B, and C, enter the following numbers:
A. Enter the agency number. Your agency number is _____.
B. Enter the client number. This number will be the same as the number assigned on your master list.
C. Enter the transportation zone. This number is obtained by locating the client's home location on the transportation map, and identifying the zone number within which they live.

Each individual survey should have the same agency number, but different client numbers.

Step 5. Hand out one survey to each client who is physically limited, checking to see that their name is on the master list.

Step 6. As each client turns in his or her survey, check for completeness and then cross their name off the master list. We ask that you follow up on those persons who have not turned in their survey.

Step 7. When all of the surveys have been completed and turned in to your agency, simply give us a call at the District office (687-0613) and we will come by to pick them up. We ask that you try to complete this surveying process within a week.

Please keep this procedure letter and turn it in with the surveys. We need to know the total number of clients and number of physically limited from steps one and two.

We sincerely appreciate your help.

Michael Butts
Phyllis P. Loobey

Michael Butts
Phyllis Loobey
Project Coordinators

P. O. Box 1135, Eugene, Oregon 97401 • Telephone: 503/687-0613

LANE TRANSIT DISTRICT

December 14, 1973

Dear Citizen:

We are presently in the process of studying the needs and desires of persons with mobility problems for transportation services. We are contacting you through the Public Welfare Department, who offered their help in this study. The Welfare Department has addressed this letter, and so they alone are the only persons knowing your name and home location. This survey is being sent to you as well as many other people in the Eugene-Springfield area.

To plan and design an accessible transportation system, we need your help. In order to know what your needs and desires are, we are asking you to fill out the survey accompanying this letter. If we do not have the information in the survey:

1. We will not be able to get an accurate picture of the number of people nor of the needs for special transportation. The result will be inadequate service, thus an inefficient use of public funds and,
2. without a valid, accurate study, we cannot meet the federal funding requirements to even build such a system.

We sincerely appreciate your taking time to correctly fill out this survey questionnaire. Your help is vital to our effort. If you have any questions about the study or the survey, please feel free to contact us at the Lane Transit District office. The number is 687-0613. Or, call your local social service agency. Please return the completed survey to the Lane Transit District office, P. O. Box 1135, Eugene, Oregon 97401.

Thank you for your prompt reply.

Sincerely yours,

Mike Butts

Phyllis Loobey

Mike Butts
Phyllis Loobey
Project Coordinators

MB/ms
Enclosure

P. O. Box 1135, Eugene, Oregon 97401 • Telephone: 503/687-0613

LANE TRANSIT DISTRICT

TRANSPORTATION ALTERNATIVES

CLIENT INVENTORY SURVEY

Many people in the Eugene/Springfield area have expressed a concern to extend bus service to those persons with physical limitations. This survey is an important part of a study which will determine the kind of transportation services required by the physically limited. We are asking you to help us in this study. Please fill out this survey as accurately and completely as possible. We sincerely appreciate your taking time to fill out this survey questionnaire.

Survey Number ___/___
Home Location by Transportation Zone ____

1. Please indicate if you have previously filled out a Transportation Alternative survey. ____yes ____no. (If yes, please indicate below through which agency you were contacted and then simply return the survey.

Agency Name________________________________
(If no, please continue with the survey questions.)

To begin the survey, we would like to ask a few questions about you personally.

2. Check the age group which applies to you.
   a. ____1-15 years of age
   b. ____16-25 years of age
   c. ____26-45 years of age
   d. ____46-64 years of age
   e. ____65-70 years of age
   f. ____71-75 years of age
   g. ____76 or older

3. Please indicate whether you are ____male, or ____female.

4. How much schooling have you had?
   a. ____Grade school
   b. ____Junior high
   c. ____Some high school
   d. ____Graduated from high school
   e. ____Some college (including Jr. College
   f. ____Graduated from college
   g. ____Advanced degree
   h. ____Other (specify)__________

   Are you presently a student? ____yes, ____no.

5. What is your marital status?
   a. ____Single
   b. ____Married
   c. ____Divorced or separated
   d. ____Widowed

6. What type of residence do you live in?
   a. ____Private home
   b. ____Apartment
   c. ____Retirement home
   d. ____Health care facility
   e. ____Other (specify)__________
   ____

Now we would like to ask some questions about your general health.

7. Which one of the following statements generally describes your ability to move about? Can you get out of the house? (Check one of the following):

a. ____I must stay in bed all or most of the time.
b. ____I must stay in the house all or most of the time.
c. ____I need the help of another person in getting around outside of the house.
d. ____I do not need the help of another person, but I do use a special aid in getting around outside of the house. (i.e., cane, wheelchair, walker, etc.)
e. ____I do not need the help of another person or a special aid, but I do have trouble getting around freely outside of the house.
f. ____I do not need another person or aid to get around freely outside of the house.

(If answer to question #7 is "e" or "f", go on to question #12.)

8. Which one of the following statements generally describes your ability to carry on major activities? (employment, education, etc.)

a. ____I am unable to carry on major activities.
b. ____I have limitations in major activities.
c. ____I have some limitations, but not in major activities.
d. ____I have no limitations.

9. Do any of the above limitations make life very difficult for you? Do you feel that these limit your horizons, that you are missing a lot?

____yes, ____no.

Why?____

____

____

10. My inability to get around freely is a result of one of the following:

a. ____Temporary condition (less than six months duration)
b. ____Chronic condition (more than six months duration)

If the answer to #10is "b" (chronic condition), please indicate how long you have had this condition.

c. ____6 months to one year
d. ____One to five years
e. ____Five to ten years
f. ____Ten to twenty years
g. ____20 years to all of my life.

11. Please specify your physical limitation and the aid you use, if any.

a. ____1. Visual impairment
____2. Hearing impairment
____3. Speech impairment
____4. Heart condition
____5. Hypertension
____6. Shortness of breath
____7. Tire easily
____8. Arthritic
____9. Fracture
____10. Paralysis
____11. Other (specify)____
____

b. ____1. Seeing-eye dog
____2. Cane
____3. Hearing aid
____4. Wheelchair
____5. Walker
____6. Crutches
____7. Brace(s)
____8. Artificial limb(s)
____9. Human Assistant

12. Could you perform the following actions if necessary? Please respond with either yes, no or with difficulty (wd).

a. ____Walk or move with aid one block to the bus stop
b. ____Walk or move with aid three blocks to the bus stop
c. ____Go up or down stairs
d. ____Go up or down a curb
e. ____Go up or down inclines
f. ____Sit down or get up from a bench
g. ____Wait standing 15 minutes
h. ____Push open a door, (i.e., bus door, revolving doors, etc.)
i. ____Grasp hand rails
j. ____Cross intersections in the time allowed by signal lights
k. ____Move in crowds

Next we would like to get an indication of your trip patterns.

13. Please indicate the trips you make in an average week. Please fill in all of the blanks across the page.

Place	Location of destination (address	No. of times per week	Type of transportation (own car, friend's car, agency vehicle, bus, walk)	Usual day and time of day trip is made	
				day	time of day
Store/ shopping					
School					
Recreation					
Medical/ rescriptions					
Church					
Visit friends or family					
Work					
Other (specify)					

14. What is your present job status?
 a. ____Employed (including part-time, temporarily laid-off, self-employed, and volunteer work)
 b. ____Not employed and not looking
 c. ____Not employed and looking
 d. ____Retired
 e. ____Homemaker

15. Please check those sources of income from which your personal income comes before taxes.
 a. ____Salary, wages, interest, dividends
 b. ____Employer's disability pension
 c. ____Veteran's disability pension
 d. ____Social Security disability pension
 e. ____Income from welfare agency
 f. ____Other disability income (specify)______________________________
 g. ____Other nondisability income (i.e., scholarship, work pension plan)

16. Which one of the following groups describes your annual income
 a. ____Under $4,200
 b. ____$4,200 - $7,000
 c. ____$7,000 - $10,000
 d. ____$10,000 +
 How many people, including yourself, are supported by this income?_________

17. Please indicate about how much you spend on transportation in an average week.
 a. ____Less than $1.00
 b. ____$1.00 - $2.50
 c. ____$2.50 - $5.00
 d. ____$5.00 - $10.00
 e. ____$10.00 - $15.00
 f. ____$15.00 +

18. If transportation were no longer a problem where would you like to go? How often would you want to go to those places? By what means would you prefer to travel (bus, car, walk). Why did you select that means?

Place	# of times per week	Preferred means	Reason for selection of Means
Shopping			
Medical			
Work			
School			
Visiting			
Church			
Recreation			
Other			

19. Please make comments in regards to the following questions:

a. Questions you feel should have been asked but were not:____________

b. Ideas or thoughts you have that would help in the design of a transportation system tailored to your needs:____________

c. List names and addresses of those persons you feel should have been included in our survey but were not (those persons with physical limitations only)____________

NEWS LETTER

Transportation Alternatives Workshop
19 October 1973

Our workshop was the opening event for the Transportation Alternatives Study. During the first phase of "defining the problem", we confronted the physical barriers inherent in the current design of vehicles. Following this half of the program, we moved into Phase II, "attempting a solution".

Many innovative ideas were brought forward during the Round 2 Planning Phase. Participants' interest varied widely from detailed vehicle design to general system designs.

We wish to extend our appreciation to those who participated in the workshop. About 25 representatives from the following agencies attended:

- Eugene Speech & Hearing Clinic
- Red Cross
- Vocational Rehabilitation
- S.O.S.
- Home Health Service
- Oregon Architectural Barriers Council
- Eugene-Springfield Ambulance Service
- Emerald Council for the Blind
- Eugene Parks & Recreation
- Lane Co. Council on Alcoholism
- Mayor's Advisory Committee

Success of the workshop was the result of your cooperative spirit which prevailed throughout the meeting.

Representatives at the meeting were given Agency Inventory Surveys. For those agencies who did not attend, the Survey is enclosed.

Federal Funding of LTD grant application

The specifications for vehicles in LTD's capital grant application will not be written until after the first of the year. The final report from this study, "Transportation Alternatives" is scheduled for completion in March 1974. The results from the study are needed to amend the vehicle specifications to make the buses accessible to physically limited and the elderly.

TRANSPORTATION ALTERNATIVES

BUS DRIVER SURVEY

Many people in the Eugene/Springfield area have expressed a concern to extend bus service to those persons with physical limitations. This survey is an important part of a study which will determine the kind of transportation services required by the physically limited. We are asking you to fill out this survey as your input is that of first hand experience with this problem. Please respond as accurately and completely as possible. Thank you.

1. How many persons (65 years and over) boarding your bus (on an average week) experience difficulties in using the present bus system?

   ________ average number per week

2. How many disabled persons (less than 65 years old) boarding your bus (on an average week) experience difficulties in using the present bus system? (i.e. those persons physically disabled, blind, etc.)

   ________ average number per week

3. Of the above persons (from Questions #1 and #2) experiencing difficulties in using the present bus system, check below the percentage that are experiencing the following specified problems.

   a. _____% First step too high
   b. _____% Trouble grabbing hand railings
   c. _____% Trouble placing coin in coin slot
   d. _____% Problems in getting in and out of seat
   e. _____% Trouble sliding on seat while bus is in motion
   f. _____% Trouble reaching for stop buzzer
   g. _____% Other, explain ______________________
   h. _____% Other, explain ______________________

4. Please give suggestions that you may have which may help alleviate the above difficulties for the elderly and disabled. Please include such items as vehicle design, routing/scheduling, information dissemination, terminal/shelter design, ideas for personnel assistance, miscellaneous.

   ____

   ____

   (Use back side of survey for answer)

LANE TRANSIT DISTRICT

December 5, 1973

We felt that you should be informed about the "Transportation Alternatives" Study we are conducting in conjunction with the Lane Transit District. Many citizens in the Eugene/Springfield area have expressed a concern to extend bus service to those persons with physical limitations. This study is being conducted in response to this concern.

This study is being planned and conducted by Phyllis Loobey, a student in C.S.P.A., working through the PED (Program Evaluation and Development) program, and myself, Michael Butts, a graduate student in Urban Planning, both at the University of Oregon.

The Lane Transit District will be ordering twenty new buses during the spring of 1974. At the November board meeting, the Board of Directors unanimously voted approval for this study. The study will give the District the necessary data with which to write the specifications for the new buses. Enclosed is a copy of the project description which briefly outlines the purpose and objectives of the study. This six month study will be completed by March, 1974.

We are presently in the second phase of our research. We are in the process of interviewing over 1,500 disabled persons in the Metropolitan area. We believe this study will give a transportation alternative to the physically limited and elderly of this area. It will also serve as a model for those cities that wish to undertake a similar study.

We would appreciate your comments and suggestions, and would be pleased to answer any questions you may have concerning the study.

Sincerely yours,

Mike Butts
Phyllis Loobey
Project Coordinators

MB/ms
Enclosure: T.A.Summary

P. O. Box 1135, Eugene, Oregon 97401 • Telephone: 503/687-0613

Mark Hatfield - U.S. Senator
Robert Packwood - U.S. Senator
John Dellenback - U.S. House of Representatives

Edward Fadely - State Senator
Betty Browne - State Senator
George Wingard - State Senator

Wayne Whitehead - State Representative
Larry Perry - State Representative
Mary Burrows - State Representative
Nancie Fadeley - State Representative
David Stults - State Representative
Richard Eymann - State Representative

APPENDIX D

Finding: The sample population is representative of the target population.

Representativeness of Sample

"1. The sample must be adequate in size so estimates about characteristics of people in the community can be made with reasonable precision.

2. The sample must include people who together are representative of the community.

To this point the discussion has stressed that we must have a sample size adequate to yield the desired precision. However, merely having a large sample does not guarantee representativeness. Once the sample size is fixed, a rigorous procedure for selecting the people to be interviewed is demanded in order to be reasonably sure they reflect the characteristics under study, within the limits assumed by sampling theory."[1]

See also Chapter 1, Research Methodology for the procedures employed in drawing the sample.

Survey results were processed at the Computer Center at the University of Oregon using SPSS (Statistical Package for Social Scientists) for cross-tabulations, frequencies, etc.

100% of Elderly & Non-Elderly Handicapped.	16% of 10,820 1,731 persons who do or could use existing system.	61% of 10,820 6,600 persons who could use modified system including lifts and demand response capability.	23% of 10,820 2,489 persons who require medical transportation.
4% sample	99 persons	373 persons	142 persons

Table 22
Representativeness of Transportation
Alternatives Sample

Finding: A substantial number of physically limited and elderly need specialized transportation services.

SYSTEM ALTERNATIVES

The following Table 22 indicates the system alternatives by age groupings for the Transportation Alternatives sample. As noted, 72.4 percent of the respondents need a demand-response system to provide them public transportation.

Question twelve on the Client Inventory Survey asked each respondent to indicate either yes, no or with difficulty to eleven different functional disabilities. Of these eleven, five were chosen as being most relevant to systems planning. Each set of these key variables were tested as outlined on Diagram 2. On this particular question, a 92.5% response rate was received.

The five key variables chosen for testing were:

Mnemonic	Functional Disability
ACTABLA	Walk or move with aid one block to the bus stop
ACTABLB	Walk or move with aid three blocks to the bus stop
ACTABLC	Go up or down stairs
ACTABLG	Wait standing 15 minutes
ACTABLK	Move in crowds

The SPSS routine used to achieve the results found on Table 22 follows:

```
Comment         This routine distinguishes those among the target popula-
                tion who can be served by the present system, those who
                could be served by an adapted system and those who need a
                demand-response system. A decision table was constructed
                to test the inter-relatedness and the sensitivity of
                functional disabilities found in the respondents.
Compute         System=3
If              (ACTABLA Le. 1 and ACTABLB Eq. 1 and ACTABLC Eq. 1 and
                ACTABLG Eq. 1 and ACTABLK Le. 1) System=1
If              (ACTABLA Eq. 1 and ACTABLB Ne. 2 and ACTABLC Gt. 1 and
                ACTABLG Eq. 1 and ACTABLK Le. 1) System=2
If              (ACTABLA Eq. 0 and ACTABLB Eq. 0 and ACTABLC Eq. 0 and
                ACTABLG Eq. 0 and ACTABLK Eq. 0) System=4
Var Labels      System, Transportation System and related Subsystem
Value Labels    System (1) fixed route (2) adapted fixed route (3) demand-
                response (4) embedded non-response
Print formats   System (0)
Crosstabs       Age by system
```

TABLE 23

THE DISTRIBUTION OF PHYSICALLY LIMITED AND ELDERLY BY SYSTEM ALTERNATIVES BY AGE

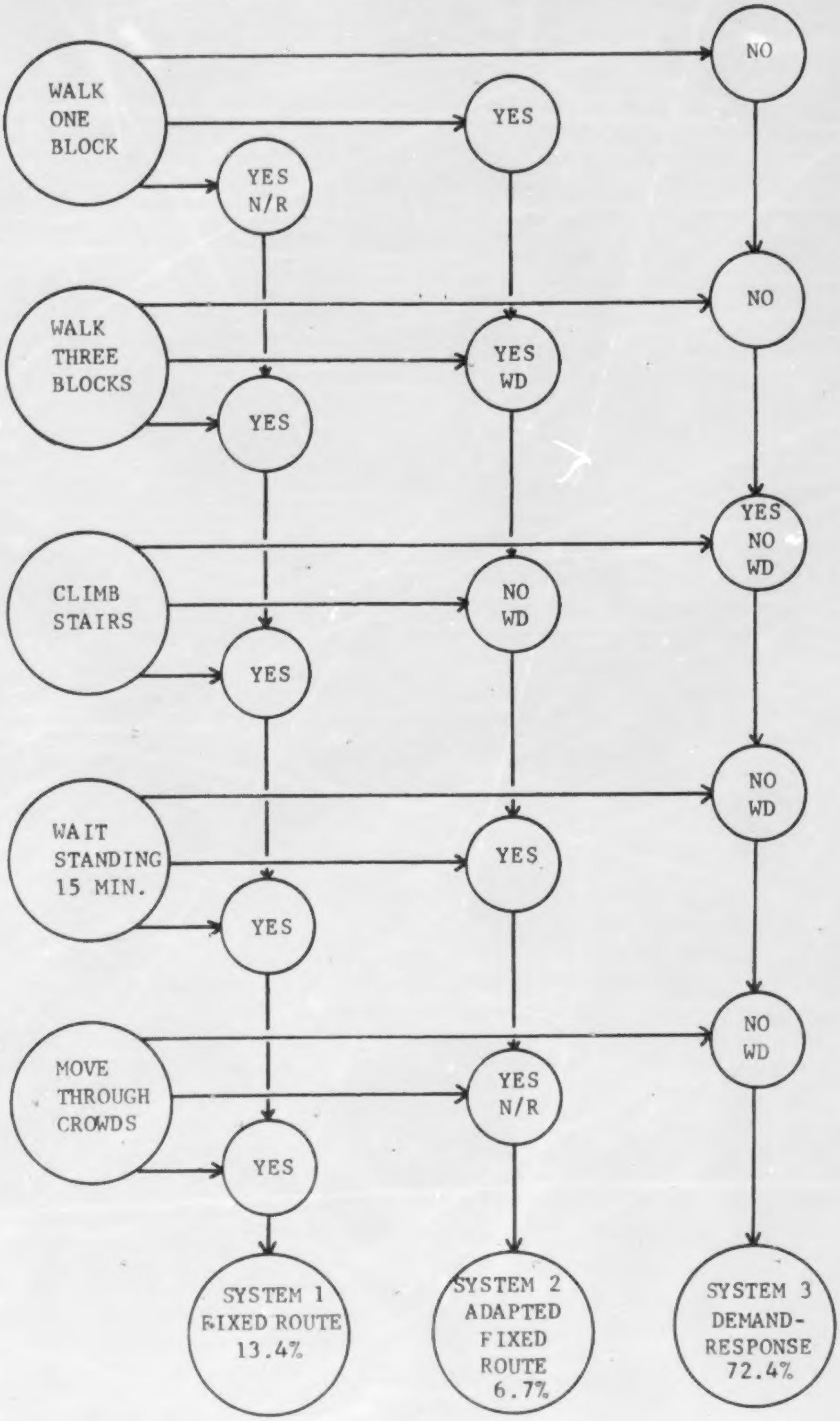
Transportation Alternative Sample

Age	Fixed Route		Adapted Fixed Route		Demand-Response		Embedded Non-responses			
	N	%	N	%	N	%	N	%		
16-25	11	22.0	1	4.0	18	6.7	4	14.3		
26-45	10	20.0	7	28.0	30	11.1	1	3.6		
46-64	13	26.0	14	56.0	81	30.0	11	39.3		
65-70	5	10.0	1	4.0	24	8.9	4	14.3		
71-75	2	4.0	2	8.0	23	8.5	2	7.1		
76 or older	9	8.3	0	0	94	34.8	6	21.4		
TOTAL	50	13.4	25	6.7	270	72.4	28	7.5	373	100%
ADJ. FREQ.	--	14.5	--	7.2	--	78.3	--	--		

The results of this table show the systems design alternatives that satisfy the responses to the functional disabilities embraced in question twelve of the Client Inventory Survey. Of the eleven functional disabilities listed, five were determined to be most relevant to transportation planning. These five were tested to determine the alternative best suited to meet the capability of each respondent to perform these functional disabilities. As shown, 14.5% of the sample population is capable of using the present fixed-route system. If the fixed-route vehicles were adapted with lifts and/or other improvements then an additional 7.2% of the sample population could use the system. The preponderance of the respondents (78.3%) however, could not use an adapted fixed-route system but will need a demand-response (door to door) system for mobility. The decision-table used to determine the systems design alternatives is shown on Diagram 2 which follows immediately.

DIAGRAM 2

SYSTEM ALTERNATIVES DETERMINED BY INTERRELATED FUNCTIONAL DISABILITIES


WALK ONE BLOCK
NO
YES
YES N/R
WALK THREE BLOCKS
NO
YES WD
YES
CLIMB STAIRS
YES NO WD
NO WD
YES
WAIT STANDING 15 MIN.
NO WD
YES
YES
MOVE THROUGH CROWDS
NO WD
YES N/R
YES
SYSTEM 1 FIXED ROUTE 13.4%
SYSTEM 2 ADAPTED FIXED ROUTE 6.7%
SYSTEM 3 DEMAND-RESPONSE 72.4%

N/R = non-response
WD = with difficulty

Finding: The lifts, as presently designed, do not appear to be compatible with standards of public transportation.

"American Transit Association Study of the Transportation Needs of the Elderly and the Handicapped"

"V. CONCLUSIONS:

A. The vast majority of the elderly and the handicapped (who are not sufficiently mobile to walk to a bus stop) can best be served by a demand-responsive, door-through-door, specially equipped small vehicle transportation.

B. The potential quantity of users of an elevating mechanism on regular commuter buses is extremely minute.

D. The most meaningful classification of the handicapped is the individual's ability and willingness to walk to and from bus or rapid rail stations in all weather.

F. The accommodation for and placement of wheel-chairs on regular commuter buses is operationally infeasible and would be a detriment to the encouragement of additional passengers to ride transit."[2]

FOOTNOTES

1. Backstrom, Charles H. and Hursh, Gerald D., Survey Research, pp. 25 and 33.

2. American Transit Association, "American Transit Association Study of the Transportation Needs of the Elderly and the Handicapped", pp. 2, 3.

ADDENDUM

DRAFT - APRIL 8, 1974

Sketch Plan of Demand Response Subsystem

GOAL:

Establish a system capable of meeting all potential transit travel demand of the handicapped population. Adjust policies to accommodate differences between actual and potential demand among handicapped, and to stimulate or reduce demand among non-handicapped. Adjustable policies include fare structure, service zones, and policies on who may ride special services.

DEMAND:

Handicapped (Elderly & non-elderly) population	10,820
61% needing major accessibility improvements	6,600
Observed daily trip frequency of the above 61%	0.39
Assumed desired trip frequency (General public: 2.9 person trips/day)	0.6
Potential daily person trips of the 61% (.6 X 6,600)	3,960
Observed modal split (% of the 61%'s current trips that are by transit. The above are transit trips now made with difficulty.	10.6%
Assumed desired modal split (The above assumption is based on attracting 10% of those trips now made by "own car" and "walk" modes, 20% of those made by "friend's car" and "agency vehicle", and 100% of those now made by "bus" to a system with fully improved access.)	25%
25% modal split X 3,960 daily person trips:	990
78% of 990 require door to door service:	772
772 daily person trips implies weekday ridership:	901

RESPONSE: (dial-a-bus subsystem)

Comparison of existing and proposed systems

Locality	Ann Arbor	Haddonfield	Regina	Proposed Eugene-Spgfd.
Average weekday ridership	214	495	2,000	900
Peak day ridership	242	580	3,500	1,200
Vehicle productivity (pass./vehicle hour)	7.8	4.1	18.8	11
Peakday ridership/peak hour bus in service	81	64	292	152
Peak no. of buses in service	3	9	12	8
Buses in fleet	5+ *	12	16+ *	11+ *
Average weekday wait time	10 min.	12.6 min.	15 min.	14 min.
Average weekday ride time	15	9.9	7	11
Average weekday total time	25	22.5	22	25
Average fare	.44	.50	.32	.30

* Extra reserve buses are provided from fixed route fleet in case of accidents or extended "down" time due to mechanical difficulties.

CONCLUSION:

When the door-to-door transit travel demand of the handicapped population in the Eugene-Springfield area reaches its potential, an eleven bus fleet will be fully utilized with no additional space for non-handicapped. However, a gradual growth in patronage among both handicapped and non-handicapped will allow time for decision-making regarding further fleet expansion.

BIBLIOGRAPHY

Abt Associates, Inc., Transportation Needs of the Handicapped, prepared for the Department of Transportation, Office of Economics and Systems Analysis, Washington, D.C., 1969.

American Standards Association, "American Standard Specifications for Making Buildings and Facilities Accessible to, and Usable by, the Physically Handicapped," National Society for Crippled Children and Adults, Chicago, Illinois, 1961.

Andryshak, Richard and Crain, John. "Transportation and Older Persons," National Conference on Social Welfare, Dallas, Texas, 1971.

Backstrom, Charles H. and Hursh, Gerald D., Survey Research, Northwestern University Press, 1963.

Blake, Rusty, (Project Coordinator), Project Mobility: Access to the City, The City of Portland, 1973.

Cantilli, Edmund J., (Edited by), "Transportation and Aging Selected Issues," Department of Housing, Education and Welfare, 1971.

Carp, Frances, Ph.D., "Alternatives for Action: Transportation," National Forum of State Legislation on Older Americans, Washington, D.C., 1972.

Carp, Frances, Ph.D., "Transportation and Later Maturity," Conference on Public Transportation and the Elderly, State Department of Transportation and Florida State University, 1971.

Crain, John L., "Transportation Problems of Transit Dependent Persons," Conference on Transportation and Human Needs in the 70's, 1970.

Crain, John L., "Urban Transportation Financing," Extracted from the Second Phase of the Conference on Transportation and Human Needs in the 70's, The American University, Washington, D.C., 1972.

Crowley, Richard F., *Developmental Disabilities* I, Division of the Oregon State System of Higher Education, 1971.

Deloria, Vine Jr., *Custer Died For Your Sins*, Avon, New York, 1970.

Flemming, Arthur S., (Chairman), *Section Recommendations on Transportation*, White House Conference on Aging, Washington, D.C., 1971.

Goldsmith, Selwyn, *Designing for the Disabled*, Second Edition, McGraw-Hill Book Co., New York: 1967.

Havighurst, Robert V., "Mobility," from 46 National Leaders Speak Out on Options for Older Americans, National Retired Teachers Association and the American Association of Retired Persons, Washington, D.C., 1971.

Hirten, John A., "The Department of Transportation and Social Goals," Conference on Transportation and Human Needs in the 70's, 1972.

Hoel, Perle, Kansky, Roszner, Nesbitt, *Latent Demand for Urban Transportation*, Carnegie-Mellon University, Pittsburg, Pennsylvania, 1968.

Kobenz, D., Bagnell, J., *The Universal Traveler*, William Kaufman Co., Los Altos, California, 1973.

Lane Council of Governments. "Not Disabled and Disabled or Handicapped Labor Force Status," Oregon 4th Count, Item #52, 1970.

Omlid, Cole, Rice, *Lane County Park and Recreation Study Survey and Methodology*, Lane Council of Governments, 1973.

Osterbind, Carter C., (Edited by), *Independent Living for Older People*, University of Florida Press, Gainesville, 1972.

Perin, Constance, *With Man in Mind*, MIT Press, Cambridge, Massachusetts, and London, England, 1970.

Phillips, D. L., *Knowledge From What?* University of Amsterdam, The Netherlands, Rand McNally & Co., Chicago, 1972.

Revis, Joseph S., *Transportation*, 1971 White House Conference on Aging, Washington, D.C., 1971.

Ross, Howard R., "New Urban Transportation Technology and The Transit Dependent," Conference on Transportation and Human Needs in the 70's, 1972.

State of West Virginia, "Transportation Remuneration Incentive Program," State of Virginia, 1973.

Urban Mass Transportation Administration and Transportation System Center,"The Handicapped and Elderly Market for Urban Mass Transit," U.S. Department of Transportation, Urban Transportation Advisory Council, 1973.

Weingold, Joseph T., "Unbinding The Homebound Through Mobility," *Rehabilitation Record*, July-August, 1972.